BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2021-153-S

IN RE: Application of Palmetto Wastewater)
 Reclamation, Inc. for Adjustment of Rates) **DIRECT TESTIMONY**
 and Charges (Increase) and Terms and) **OF PAUL R. MOUL**
 Conditions of Sewer Service)

ON BEHALF OF THE

PALMETTO WASTEWATER RECLAMATION, INC.

September 2, 2021

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Appendix A - Educational Background, Business Experience And Qualifications

GLOSSARY OF ACRONYMS AND DEFINED TERMS	
ACRONYM	**DEFINED TERM**
AFUDC	Allowance for Funds Used During Construction
β	Beta
b	Represents the retention rate that consists of the fraction of earnings that are not paid out as dividends
b x r	Represents internal growth
CAPM	Capital Asset Pricing Model
CE	Comparable Earnings
DCF	Discounted Cash Flow
FOMC	Federal Open Market Committee
g	Growth rate
IGF	Internally Generated Funds
Lev	Leverage modification
LT	Long Term
M&M	Modigliani & Miller
P-E	Price-earnings
r	Represents the expected rate of return on common equity
Rf	Risk-free rate of return
Rm	Market risk premium
RP	Risk Premium
s	Represents the new common shares expected to be issued by a Firm
SBBI	Stocks, Bonds, Bills and Inflation
s x v	Represents external growth
S&P	Standard & Poor's
v	Represents the value that accrues to existing shareholders from selling stock at a price different from book value

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1   **INTRODUCTION AND SUMMARY OF RECOMMENDATIONS**

2   **Q.**   **Please state your name, occupation and business address.**

3   A.   My name is Paul Ronald Moul.   My business address is 251 Hopkins Road,

4   Haddonfield, New Jersey 08033-3062. I am Managing Consultant at the firm P. Moul

5   & Associates, an independent financial and regulatory consulting firm. My educational

6   background, business experience and qualifications are provided in Appendix A, which

7   follows my direct testimony.

8   **Q.**   **What is the purpose of your testimony?**

9   A.   My testimony presents evidence, analysis, and a recommendation concerning the

10   appropriate cost of common equity and overall rate of return that the Public Service

11   Commission of South Carolina ("PSC" or the "Commission") should recognize in the

12   determination of the revenues that Palmetto Wastewater Reclamation, Inc. ("Palmetto"

13   or the "Company") should realize as a result of this proceeding. My analysis and

14   recommendation are supported by the detailed financial data contained in Exhibit

15   PRM-1, which is a multi-page document dividend into fourteen (14) schedules.

16   **Q.**   **Based upon your analysis, what is your conclusion concerning the appropriate**

17   **rate of return on common equity for the Company in this case?**

18   A.   My conclusion is that the Company should be afforded an opportunity to earn a rate of

19   return on common equity of 10.95%. As shown on page 1 of Schedule 1, I have

20   presented the weighted average cost of capital for the Company, which is 8.08%. The

21   resulting overall cost of capital, which is the product of weighting the individual capital

22   costs by the proportion of each respective type of capital, should establish a

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1   compensatory level of return for the use of capital and provides the Company with the

2   ability to attract capital on reasonable terms.

3 **Q. Are there specific factors that you included in your analysis of the cost of equity**

4   **for the Company?**

5 A. Yes. My cost of equity analysis reflects the impact of the coronavirus pandemic that

6   began in the first quarter of 2020. These events had a significant impact on the capital

7   markets -- both debt and equity. Extraordinary events around the COVID-19 pandemic

8   have produced significant turmoil that has rocked the stock and bond markets

9   beginning in the February-March 2020 time frame. During this period, we saw abrupt

10   reaction to the coronavirus pandemic and declines in the price of crude oil. These

11   events led to the end of the record-setting 128-month economic expansion. As we

12   entered a recession in February 2020, extraordinary actions were taken by the Federal

13   Open Market Committee (FOMC) to address these disruptions. As we have neared the

14   end of the pandemic, stock prices have rebounded and have reached new highs. While

15   short-term interest rates remain at historically low levels, longer term interest rates

16   began to rise in February 2021. Stock and bond market performance has reacted to

17   renewed economic growth as business fundamentals began to return to more normal

18   levels. I have considered these events as they impact the inputs that I used in the various

19   models of the cost of equity. That is to say, I have analyzed the cost of equity models

20   using input data that follows the onset of the economic recession and beginning of the

21   recovery.

22 **Q. What background information have you considered in reaching a conclusion**

23   **concerning the Company's cost of capital?**

2

1   A.   The Company is wholly-owned subsidiary of Ni South Carolina, LLC, which is

2   ultimately owned by SouthWest Water Company. SouthWest Water Company is a

3   privately held company with two business segments. Its Service segment provides

4   water and wastewater management and related services on a contract basis to non-

5   affiliated utilities. Its Utility segment operates wholly-owned water and wastewater

6   utilities in Alabama, California, Florida, Oklahoma, Oregon, South Carolina, and

7   Texas.

8   The Company provides wastewater collection and treatment service in two

9   distinct systems (e.g. Alpine and Woodland). On a combined basis for both systems,

10   the Company has 1,368 equivalent dwelling units ("EDUs") of residential customers

11   and 6,641 EDUs of commercial customers.

12   Q.   **How have you determined the cost of common equity in this case?**

13   A.   I have measured the cost of equity for the Company using data from a proxy group of

14   eight water companies that are identified on page 2 of Schedule 3. I have used water

15   utilities to measure the cost of equity for Palmetto because there is insufficient data for

16   wastewater utilities with traded stock that could be used in an analysis such as this.

17   Moreover, of all utility types, the water utilities are probably most similar to the

18   wastewater utilities. The group of water utilities that I have assembled have the

19   following common characteristics: (i) they are listed in the "Water Utility Industry"

20   section (basic and expanded editions) of The Value Line Investment Survey, (ii) their

21   stock is publicly traded, and (iii) they are not currently the target of a publicly-

22   announced merger or acquisition. I will refer to my proxy group of eight water

23   companies as the "Water Group." The cost of common equity is established using

3

1   capital market and financial data relied upon by investors to assess the relative risk, and

2   hence the cost of equity, for Palmetto. In this regard, I have considered four (4) well-

3   recognized measures of the cost of equity: the Discounted Cash Flow ("DCF") model,

4   the Risk Premium ("RP") analysis, the Capital Asset Pricing Model ("CAPM"), and

5   the Comparable Earnings ("CE") approach.

6 Q.   **In your opinion, what factors should the Commission consider when determining**

7   **the Company's cost of capital in this proceeding?**

8 A.   The Commission's rate of return allowance must be set to cover the Company's interest

9   and dividend payments, provide a reasonable level of earnings retention, produce an

10   adequate level of internally generated funds to meet capital requirements, be

11   commensurate with the risk to which the Company's capital is exposed, assure

12   confidence in the financial integrity of the Company, support reasonable credit quality,

13   and allow the Company to raise capital on reasonable terms. The return that I propose

14   fulfills these established standards of a fair rate of return set forth by the landmark

15   Bluefield and Hope cases.[1] That is to say, my proposed rate of return is commensurate

16   with returns available on investments having corresponding risks.

17 Q.   **How have you performed your cost of equity analysis with the market data for the**

18   **Water Group?**

19 A.   I have applied the models/methods for estimating the cost of equity using the average

20   data for the Water Group. I have not measured separately the cost of equity for the

21   individual companies within the Water Group, because the determination of the cost of

22   equity for an individual company has become increasingly problematic. Indeed, an

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[1] Bluefield Water Works & Improvement Co. v. P.S.C. of West Virginia, 262 U.S. 679 (1923) and F.P.C. v. Hope Water Co., 320 U.S. 591 (1944).

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1   individual company analysis can produce anomalous results that clearly do not conform

2   with basic risk-return relationships. By employing group average data, rather than

3   individual companies' analysis, I have helped to minimize the effect of extraneous

4   influences on the market data for an individual company.

5   Q.   **Please summarize your cost of equity analysis.**

6   A.   My cost of equity determination was derived from the results of the methods/models

7   identified above. In general, the use of more than one method provides a superior

8   foundation to arrive at the cost of equity. At any point in time, any single method can

9   provide an incomplete measure of the cost of equity depending upon extraneous factors

10   that may influence market sentiment. The specific application of these methods/models

11   will be described later in my testimony. The following table provides a summary of

12   the indicated costs of equity using each of these approaches:

	Water Group
DCF	10.41%
RP	10.50%
CAPM	12.05%
Comparable Earnings	12.80%
Average	11.44%
Median	11.28%
Mid-point	11.61%

13   Focusing upon the market model approaches of the cost of equity (i.e., DCF,

14   RP and CAPM), the average equity return is 10.99% (10.41% + 10.50% + 12.05% =

15   32.96% ÷ 3). Based on these results, I propose an equity return of 10.95%, which is

1   the rounded downward average of the market-based results. My recommended cost of

2   equity of 10.95% makes no provision for the prospect that the rate of return may not be

3   achieved due to unforeseen events. Furthermore, general inflationary pressures can

4   produce cost increases that will negatively impact the Company's return unless

5   provision for them is recognized in the ratesetting process.

6   **FUNDAMENTAL RISK ANALYSIS**

7   Q.   **Is it necessary to conduct a fundamental risk analysis to provide a framework for**

8   **a determination of a utility's cost of equity?**

9   A.   Yes. It is necessary to establish a company's relative risk position within its industry

10   through a fundamental analysis of various quantitative and qualitative factors that bear

11   upon investors' assessment of overall risk. The qualitative factors that bear upon the

12   Company's risk have already been discussed. The quantitative risk analysis follows.

13   The items that influence investors' evaluation of risk and their required returns were

14   described above. For this purpose, I compared Palmetto to the S&P Public Utilities, an

15   industry-wide proxy consisting of various regulated businesses, and to the Water

16   Group.

17   Q.   **What are the components of the S&P Public Utilities?**

18   A.   The S&P Public Utilities is a widely recognized index that is comprised of electric

19   power and water companies. These companies are identified on page 3 of Schedule 4.

20   Q.   **Is knowledge of a utility's bond rating an important factor in assessing its risk and**

21   **cost of capital?**

22   A.   Yes. Knowledge of a company's credit quality rating is important because the cost of

23   each type of capital is directly related to the associated risk of the firm. So while a

                                          6

1   company's credit quality risk is shown directly by the rating and yield on its bonds,

2   these relative risk assessments also bear upon the cost of equity. This is because a

3   firm's cost of equity is represented by its borrowing cost plus compensation to

4   recognize the higher risk of an equity investment compared to debt.

5 **Q.**   **How do the bond ratings compare for Palmetto, the Water Group, and the S&P**

6   **Public Utilities?**

7 A.   Palmetto has no bond rating because its debt is held by an affiliate. The average credit

8   quality of the Water Group is an A3 from Moody's and A from S&P. For the S&P

9   Public Utilities, the average composite rating is A3 by Moody's and BBB+ by S&P.

10   Many of the financial indicators that I will subsequently discuss are considered during

11   the rating process.

12 **Q.**   **How do the financial data compare for Palmetto, the Water Group, and the S&P**

13   **Public Utilities?**

14 A.   The broad categories of financial data that I will discuss are shown Schedules 2, 3 and

15   4. I should note that the balance sheet information reported on the Company's annual

16   report submitted to PSC in years 2016 through 2019 are not comparable to the

17   information reported for the year 2020. As such, I have not reported any financial ratios

18   that involve balance sheet amounts for Palmetto. I will limit my analysis for the

19   Company to income and cash flow. The data cover the five-year period 2016-2020.

20   The important categories of relative risk may be summarized as follows:

21   Size. In terms of capitalization, Palmetto is only two-tenths of one percent the

22   average size of the Water Group, and is also a very much smaller than the average size

23   of the Water Group. All other things being equal, a smaller company is riskier than a

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1   larger company because a given change in revenue and expense has a proportionately

2   greater impact on a small firm.

3   Market Ratios. Market-based financial ratios, such as earnings/price ratios and

4   dividend yields, provide a partial measure of the investor-required cost of equity. If all

5   other factors are equal, investors will require a higher rate of return for companies that

6   exhibit greater risk, in order to compensate for that risk. That is to say, a firm that

7   investors perceive to have higher risks will experience a lower price per share in

8   relation to expected earnings.[2]

9   There are no market ratios available for Palmetto because SouthWest Water

10   ultimately owns its stock. The five-year average price-earnings multiple for the Water

11   Group was higher than that of the S&P Public Utilities. The five-year average dividend

12   yield was lower for the Water Group as compared to the S&P Public Utilities. The

13   average market-to-book ratios were higher for the Water Group than the S&P Public

14   Utilities.

15   Common Equity Ratio. The level of financial risk is measured by the

16   proportion of long-term debt and other senior capital that is contained in a company's

17   capitalization. Financial risk is also analyzed by comparing common equity ratios (the

18   complement of the ratio of debt and other senior capital). That is to say, a firm with a

19   high common equity ratio has lower financial risk, while a firm with a low common

20   equity ratio has higher financial risk. The five-year average common equity ratios,

21   based on total capital including short-term debt, were 59.9% (at year-end 2020) for

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[2] For example, two otherwise similarly situated firms each reporting $1.00 in earnings per share would have different market prices at varying levels of risk (i.e., the firm with a higher level of risk will have a lower share value, while the firm with a lower risk profile will have a higher share value).

8

1   Palmetto, 52.8% for the Water Group, and 41.3% for the S&P Public Utilities. It should

2   be noted that there is a relationship between common equity ratios and the size of a

3   company. For example, the 2020 common equity ratios for the four largest companies

4   in the Water Group was 45.0%, while the average common equity ratio was 53.9% for

5   the four smallest companies in the Water Group. It is obvious that as the size of a

6   company decreases, it is necessary to employ less financial leverage for smaller

7   companies due to the high risk associated with small size.. This situation applies to

8   Palmetto, whose size is relatively smaller than the group of small companies that are

9   members of the Water Group. Hence, the Company's common equity ratio should be

10   much higher than the average for the smaller companies in the Water Group.

11   Return on Book Equity. Greater variability (i.e., uncertainty) of a firm's earned

12   returns signifies relatively greater levels of risk, as shown by the coefficient of variation

13   (standard deviation ÷ mean) of the rate of return on book common equity. The higher

14   the coefficients of variation, the greater degree of variability. For the five-year period,

15   the coefficients of variation were 0.058 (0.6% ÷ 10.3%) for the Water Group and 0.039

16   (0.4% ÷ 10.3%) for the S&P Public Utilities. Earnings variability was higher for the

17   Water Group as compared to the S&P Public Utilities.

18   Operating Ratios. I have also compared operating ratios (the percentage of

19   revenues consumed by operating expense, depreciation, and taxes other than income).[3]

20   The five-year average operating ratios were 60.5% for Palmetto, 69.4% for the Water

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[3] The complement of the operating ratio is the operating margin which provides a measure of profitability. The higher the operating ratio, the lower the operating margin.

9

1   Group, and 78.8 for the S&P Public Utilities. Palmetto's operating risk was marginally

2   lower than the Water Group.

3   Coverage. The level of fixed charge coverage (i.e., the multiple by which

4   available earnings cover fixed charges, such as interest expense) provides an indication

5   of the earnings protection for creditors. Higher levels of coverage, and hence earnings

6   protection for fixed charges, are usually associated with superior grades of

7   creditworthiness. The five-year average interest coverage (excluding Allowance for

8   Funds Used During Construction ("AFUDC") was 2.32 times for Palmetto, 4.02 times

9   for the Water Group, and 3.02 times for the S&P Public Utilities. Palmetto's credit risk

10   as revealed by interest coverage is higher than that of the Water Group.

11   Quality of Earnings. Measures of earnings quality usually are revealed by the

12   percentage of AFUDC related to income available for common equity, the effective

13   income tax rate, and other cost deferrals. These measures of earnings quality usually

14   influence a firm's internally generated funds because poor quality of earnings would

15   not generate high levels of cash flow. Quality of earnings has not been a significant

16   concern for Palmetto, the Water Group, and the S&P Public Utilities.

17   Internally Generated Funds. Internally generated funds ("IGF") provide an

18   important source of new investment capital for a utility and represent a key measure of

19   credit strength. Historically, the five-year average percentage of IGF to capital

20   expenditures was 91.9% for Palmetto, 55.6% for the Water Group, and 69.5% for the

21   S&P Public Utilities. The Company's cash flow to construction has been very volatile

22   due to the variability of its income.

1   Betas.   The financial data that I have been discussing relate primarily to

2   company-specific risks. Market risk for firms with publicly-traded stock is measured

3   by beta coefficients. Beta coefficients attempt to identify systematic risk, i.e., the risk

4   associated with changes in the overall market for common equities.[4]   Value Line

5   publishes such a statistical measure of a stock's relative historical volatility to the rest

6   of the market. A comparison of market risk is shown by the Value Line beta of .78 as

7   the average for the Water Group (see page 2 of Schedule 3), and .91 as the average for

8   the S&P Public Utilities (see page 3 of Schedule 4). The systematic risk for the Water

9   Group as measured by the Value Line beta has been lower than the S&P Public Utilities.

10 Q.   **Please summarize your risk evaluation.**

11 A.   The risk of Palmetto exceeds that of the Water Group. It is very much smaller than the

12   Water Group. Moreover, the Company lacks the diversity displayed by many of the

13   members of the Water Group. On balance, the Water Group will provide a very

14   conservative basis for measuring the Company's cost of equity for this case.

15   **CAPITAL STRUCTURE RATIOS**

16 Q.   **Does Schedule 5 provide Palmetto's capitalization and capital structure ratios?**

17 A.   Yes. Schedule 5 presents Palmetto's capitalization and related capital structure ratios

18   at December 31, 2020, which corresponds with the end of the test-year for the

19   Company. The resulting capital structure ratios are 40.08% long-term debt and 59.92%

20   common equity.

21 Q.   **Are these capital structure ratios reasonable?**

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[4] The procedure used to calculate the beta coefficient published by Value Line is described on page 3 of Schedule 15. A common stock that has a beta less than 1.0 is considered to have less systematic risk than the market as a whole and would be expected to rise and fall more slowly than the rest of the market. A stock with a beta above 1.0 would have more systematic risk.

11

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1   A.   Yes. I have verified the reasonableness of the Company's common equity ratio by

2   considering the historical capital structure ratios for the Water Group and with analysts'

3   forecasts, which influence investor expectations. Historically, the Water Group has

4   employed 52.8% common equity as the five-year average. I have also compared the

5   Company's proposed common equity ratio to that of the Water Group based upon

6   forecast data widely available to investors from <u>Value Line</u>. In the case of the <u>Value</u>

7   <u>Line</u> forecasts, the common equity ratios are computed without regard to short-term

8   debt. Those ratios are:

Company	2020	2021	2022	2024-26
American States Water	52.8%	55.0%	54.5%	46.5%
American Water Works	40.9%	40.5%	39.5%	39.0%
California Water	54.1%	55.5%	56.5%	62.0%
Essential Utilities	46.0%	45.0%	44.0%	44.0%
Middlesex Water	55.7%	57.0%	58.0%	60.0%
SJW Group	41.6%	46.5%	49.0%	62.0%
York Water Company	53.7%	55.5%	57.5%	62.5%
Average	49.3%	50.7%	51.3%	53.7%
Smaller Companies	54.1%	55.8%	56.7%	56.3%
Larger Companies	45.7%	46.9%	47.3%	51.8%

Source: The Value Line Investment Survey, April 9, 2021

9   As I established previously, there is a relationship between the size of a company and

10   its common equity ratio. The Value Line forecasts substantiate this proposition. That

11   is to say, the <u>Value Line</u> forecasts show that higher common equity ratios are necessary

12   for smaller companies. These forecasts show that the 59.92% common equity ratio for

13   Palmetto is reasonable by reference to the forecast ratios of the Water Group. With,

1   the Company's much smaller relative size, its common equity ratio needs to be higher

2   than the average shown for the smaller group of companies in the Water Group.

3 Q. **What capital structure ratios do you recommend be adopted for rate of return**

4   **purposes in this proceeding?**

5 A. Since rate setting is prospective, the rate of return should, at a minimum, reflect known

6   or reasonably foreseeable changes which will occur during the period that rates will be

7   effective. As a result, I will adopt the Company's test period capital structure ratios of

8   40.08% long-term debt and 59.92% common equity. These capital structure ratios are

9   the best approximation of the mix of capital the Company will employ to finance its

10   rate base during the period new rates are in effect.

11   **COST OF SENIOR CAPITAL**

12 Q. **What cost rate have you assigned to the debt portion of Palmetto's capital**

13   **structure?**

14 A. The determination of the long-term debt cost rate is usually an arithmetic exercise. This

15   is due to the fact that a company has contracted for the use of this capital for a specific

16   period of time at a specified cost rate. This is not the case for the debt of Palmetto.

17   Hence, there is no stated rate that can be utilized for this purpose. Instead, I propose to

18   utilize the interest rate from the Mergent Bond Record for Baa-rated public utility

19   bonds. This represents a very conservative approach, since due to the Company's very

20   small size, it would certainly not qualify for an investment grade bond rating. For this

21   case, I have utilized the average yield of 3.79% (4.19% + 3.39% = 7.58% ÷ 2) covering

22   the years 2019 and 2020 (see page 1 of Schedule 11). I selected this period because it

23   contains bond yields that existed on average during the pandemic (i.e., 2020) and the

1 year immediately preceding the pandemic. Using this average will normalize the

2 effects of monetary policy and economic conditions attributed to the pandemic. Hence,

3 a 3.79% cost of debt is reasonable for the Company in this case.

4 <u>**COST OF EQUITY – GENERAL APPROACH**</u>

5 Q. **Please describe how you determined the cost of equity for the Company.**

6 A. Although my fundamental financial analysis provides the required framework to

7 establish the risk relationships among Palmetto, the Water Group, and the S&P Public

8 Utilities, the cost of equity must be measured by standard financial models that I

9 identified above. Differences in risk traits, such as size, business diversification,

10 geographical diversity, regulatory policy, financial leverage, and bond ratings must be

11 considered when analyzing the cost of equity.

12 It is also important to reiterate that no one method or model of the cost of equity

13 can be applied in an isolated manner. Rather, informed judgment must be used to take

14 into consideration the relative risk traits of the firm. It is for this reason that I have

15 used more than one method to measure the Company's cost of equity. As I describe

16 below, each of the methods used to measure the cost of equity contains certain

17 incomplete and/or overly restrictive assumptions and constraints that are not optimal.

18 Therefore, I favor considering the results from a variety of methods. In this regard, I

19 applied each of the methods with data taken from the Water Group and arrived at a cost

20 of equity of 10.95% for Palmetto.

21 <u>**DISCOUNTED CASH FLOW**</u>

22 Q. **Please describe the Discounted Cash Flow model.**

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1   A.   The DCF model seeks to explain the value of an asset as the present value of future

2   expected cash flows discounted at the appropriate risk-adjusted rate of return. In its

3   simplest form, the DCF-determined return on common stock consists of a current cash

4   (dividend) yield and future price appreciation (growth) of the investment. The dividend

5   discount equation is the familiar DCF valuation model, which assumes that future

6   dividends are systematically related to one another by a constant growth rate. The DCF

7   formula is derived from the standard valuation model: $P = D/(k-g)$, where P = price, D

8   = dividend, k = the cost of equity, and g = growth in cash flows. By rearranging the

9   terms, we obtain the familiar DCF equation: $k = D/P + g$. All of the terms in the DCF

10   equation represent investors' assessment of expected future cash flows that they will

11   receive in relation to the value that they set for a share of stock (P). The DCF equation

12   is sometimes referred to as the "Gordon" model.[5]   My DCF results are provided on

13   Schedule 1, page 2, for the Water Group. The DCF return is 10.41% for the Water

14   Group.

15   Among the limitations of the model, there is a certain element of circularity in

16   the DCF method when applied in rate cases. This is because investors' expectations

17   for the future depend upon regulatory decisions. In turn, when regulators depend upon

18   the DCF model to set the cost of equity, they rely upon investor expectations that

19   include an assessment of how regulators will decide rate cases. Due to this circularity,

20   the DCF model may not fully reflect the true risk of a utility.

21   Q.   **What is the dividend yield component of a DCF analysis?**

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[5] Although the popular application of the DCF model is often attributed to the work of Myron J. Gordon in the mid-1950's, J. B. Williams exposited the DCF model in its present form nearly two decades earlier.

15

1   A.   The dividend yield reveals the portion of investors' cash flow that is generated by the

2   return provided by the dividends an investor receives. It is measured by the dividends

3   per share relative to the price per share. The DCF methodology requires the use of an

4   expected dividend yield to establish the investor-required cost of equity. For the twelve

5   months ended April 2021, the monthly dividend yields are shown on Schedule 7. The

6   month-end prices were adjusted to reflect the buildup of the dividend in the price that

7   has occurred since the last ex-dividend date (i.e., the date by which a shareholder must

8   own the shares to be entitled to the dividend payment – usually about two to three

9   weeks prior to the actual payment).

10   For the twelve months ended April 2021 the average dividend yield was 1.91%

11   for the Water Group based upon a calculation using annualized dividend payments and

12   adjusted month-end stock prices. The dividend yields for the more recent six-month

13   and three-month periods were 1.87% and 1.88%, respectively. For applying the DCF

14   model, I have used the six-month average dividend yield of 1.87% for the Water Group.

15   The use of this dividend yield will reflect current capital costs, while avoiding spot

16   yields. For the purpose of a DCF calculation, the average dividend yield must be

17   adjusted to reflect the prospective nature of the dividend payments, i.e., the higher

18   expected dividends for the future. Recall that the DCF is an expectational model that

19   must reflect investors' anticipated cash flows. I have adjusted the six-month average

20   dividend yield in three different, but generally accepted, manners and used the average

21   of the three adjusted values as calculated in the lower panel of data presented on

16

1   Schedule 7.[6] This adjustment adds seven basis points to the six-month average

2   historical yield, thus producing the 1.94% adjusted dividend yield for the Water Group.

3 **Q.   What factors influence investors' growth expectations?**

4 A.   As noted previously, investors are interested principally in the dividend yield and future

5   growth of their investment (i.e., the price per share of the stock). Future growth in

6   earnings per share is the DCF model's primary focus because, under the model's

7   assumption that the price-earnings multiple remains constant, the price per share of

8   stock will grow at the same rate as earnings per share. A growth rate analysis considers

9   a variety of variables to reach a consensus of prospective growth, including historical

10   data and widely available analysts' forecasts of earnings, dividends, book value, and

11   cash flow (all stated on a per-share basis). A fundamental growth rate analysis is

12   frequently based upon internal growth (b x r), where "r" is the expected rate of return

13   on common equity and "b" is the retention rate (a fraction representing the proportion

14   of earnings not paid out as dividends). To be complete, the internal growth rate should

15   be modified to account for sales of new common stock (external growth), which is

16   represented by the formula s x v, where "s" is the number of new common shares the

17   firm expects to issue and "v" is the value that accrues to existing shareholders from

18   selling stock at a price above book value. Fundamental growth, which combines

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[6] Under the 1/2 growth approach, the procedure to adjust the average dividend yield for the expectation of a dividend increase during the initial investment period will be at a rate of one-half the growth component, which assumes that two dividend payments will be at the expected higher rate during the initial investment period. Under the discrete approach, the "g" in the DCF model reflects the discrete growth in the quarterly dividend, which is required for the periodic form of the DCF in order to properly recognize that dividends grow on a discrete basis. The quarterly approach takes into account that investors have the opportunity to reinvest quarterly dividend receipts. Recognizing the compounding of the periodic quarterly dividend payments (D0), results in this third DCF formulation. This DCF equation provides no further recognition of growth in the quarterly dividend. A compounding of the quarterly dividend yield provides another procedure to recognize the necessity for an adjusted dividend yield.

1   internal and external growth, encompasses the factors that cause book value per share

2   to grow over time.

3   Growth also can be expressed in multiple stages. This expression of growth

4   consists of an initial "growth" stage where a firm enjoys rapidly expanding markets,

5   high profit margins, and abnormally high growth in earnings per share. Thereafter, a

6   firm enters a "transition" stage where fewer technological advances and increased

7   product saturation begin to reduce the growth rate and profit margins come under

8   pressure. During the "transition" phase, investment opportunities begin to mature,

9   capital requirements decline, and a firm begins to pay out a larger percentage of

10   earnings to shareholders. Finally, the mature or "steady-state" stage is reached when a

11   firm's earnings growth, payout ratio, and return on equity stabilize at levels where they

12   remain for the life of a firm. The three stages of growth assume a step-down of high

13   initial growth to lower sustainable growth. Even if these three stages of growth can be

14   envisioned for a firm, the third "steady-state" growth stage, which is assumed to remain

15   fixed in perpetuity, represents an unrealistic expectation because the three stages of

16   growth can be repeated. That is to say, the stages can be repeated where growth for a

17   firm ramps-up and ramps-down in cycles over time. For these reasons, there is no need

18   to analyze growth rates individually for each cycle, but rather to rely upon analysts'

19   growth forecasts, which are those used by investors when pricing common stocks.

20   **Q.** **How did you determine an appropriate growth rate?**

21   A.   The growth rate used in a DCF calculation should measure investor expectations.

22   Investors consider both company-specific variables and overall market sentiment (i.e.,

23   level of inflation rates, interest rates, economic conditions, etc.) when balancing their

1   capital gains expectations with their dividend yield requirements. Investors are not

2   influenced solely by a single set of company-specific variables weighted in a formulaic

3   manner. Therefore, all relevant growth rate indicators should be evaluated using a

4   variety of techniques when formulating a judgment of investor-expected growth.

5   Q.   **What data for the Water Group have you considered in your growth rate**

6   **analysis?**

7   A.   I considered the growth in the financial variables shown on Schedules 8 and 9, which

8   reflect historical (Schedule 8) and projected (Schedule 9) rates of growth in earnings

9   per share, dividends per share, book value per share, and cash flow per share for the

10   Water Group. While analysts will review all measures of growth, as I have done,

11   earnings per share growth directly influences the expectations of investors for the future

12   performance of utility stocks. Forecasts of earnings growth are required because the

13   DCF model is forward-looking, and, with the constant price-earnings multiple and

14   constant payout ratio that the DCF model assumes, all other measures of growth will

15   mirror earnings growth. The historical growth rates were obtained from the Value Line

16   publication that provides those data. While historical data cannot be ignored, it is much

17   less significant in applying the DCF model than projections of future growth. Investors

18   cannot purchase the past earnings of a utility. To the contrary, they are only entitled to

19   future earnings, which are the focus of growth projections. Furthermore, if significant

20   weight is assigned to historical performance, the historical data are double counted

21   because they are already factored into analysts' forecasts of earnings growth.

22 Q.   **Is a five-year investment horizon associated with the analysts' forecasts consistent**

23   **with the traditional DCF model?**

1 A. Yes, it is. Although the constant form of the DCF model assumes an infinite stream of

2 cash flows, investors do not expect to hold an investment indefinitely. Rather than

3 viewing the DCF in the context of an endless stream of growing dividends (e.g., a

4 century of cash flows), the growth in the share value (i.e., capital appreciation, or

5 capital gains yield) is most relevant to investors' total return expectations. Hence, the

6 sale price of a stock can be viewed as a liquidating dividend that can be discounted

7 along with the annual dividend receipts during the investment-holding period to arrive

8 at the investors' expected return. The growth in the price per share will equal the

9 growth in earnings per share if, as the DCF model assumes, there is no change in the

10 price-earnings (P-E) multiple. As such, my company-specific growth analysis, which

11 focuses principally upon five-year forecasts of earnings per share growth, conforms

12 with the type of analysis that influences investors' expectations of their actual total

13 return. Moreover, academic research focuses also on five-year growth rates

14 specifically because market outcomes occurring over that investment horizon are what

15 influence stock prices. Indeed, if investors required forecasts beyond five years in order

16 to properly value common stocks, then it would be reasonable to expect that some

17 investment advisory service would begin publishing that information for individual

18 stocks in order to meet the demands of the marketplace. The absence of such a

19 publication suggests that there is no market for this information because investors do

20 not require forecasts for an infinite series of future data points in order to make

21 informed decisions to purchase and sell stocks.

22 Q. **What are the analysts' forecasts of future growth that you considered?**

20

1   A.   Schedule 9 provides projected earnings per share growth rates taken from analysts'

2   five-year forecasts compiled by IBES/First Call, Zacks, and Value Line. These are all

3   reliable authorities of projected growth that investors use to make buy, sell and hold

4   decisions. The IBES/First Call and Zacks estimates are obtained from the Internet and

5   are widely available to investors. The growth rates reported by IBES/First Call and

6   Zacks are consensus forecasts taken from a survey of analysts that make growth

7   projections for these companies. Notably, First Call's earnings forecasts are frequently

8   quoted in the financial press. The Value Line forecasts also are widely available to

9   investors and can be obtained by subscription or free-of-charge at most public and

10   collegiate libraries. The IBES/First Call, and Zacks forecasts are limited to earnings

11   per share growth, while Value Line makes projections of other financial variables. The

12   Value Line forecasts of dividends per share, book value per share, and cash flow per

13   share for the Water Group are also included on Schedule 9.

14   Q.   **What are the projected growth rates published by the sources you discussed?**

15   A.   Schedule 9 shows the prospective five-year earnings per share growth rates projected

16   for the Water Group by IBES/First Call (6.31%), Zacks (7.15%), and Value Line

17   (7.93%).

18   Q.   **Are certain growth rate forecasts entitled to greater weight in developing a growth**

19   **rate for use in the DCF model?**

20   A.   Yes. While a variety of factors should be examined to reach a reasonable conclusion

21   on the DCF growth rate, growth in earnings per share should receive the greatest

22   emphasis. Growth in earnings per share is the primary determinant of investors'

23   expectations of the total returns they will obtain from stocks because the capital gains

1   yield (i.e., price appreciation) will track earnings growth if the P-E multiple remains

2   constant, as the DCF model assumes. Moreover, earnings per share (derived from net

3   income) are the source of dividend payments and are the primary driver of retention

4   growth and its surrogate, i.e., book value per share growth. As such, under these

5   circumstances, greater emphasis must be placed upon projected earnings per share

6   growth. In fact, Professor Myron Gordon, the foremost proponent of the use of the

7   DCF model in setting utility rates, concluded that the best measure of growth for use

8   in the DCF model is a forecast of earnings per-share growth.[7] Consistent with

9   Professor Gordon's findings, projections of earnings per share growth, such as those

10   published by IBES/First Call, Zacks, and Value Line, provide the best indication of

11   investor expectations.

12   Q.   **What growth rate do you use in your DCF model?**

13   A.   The forecasts shown on Schedule 9 for the Water Group exhibit a range of average

14   earnings per share growth rates from 6.31% to 7.93%. DCF growth rates should not

15   be established by mathematical formulation, and I have not done so. In my opinion, a

16   growth rate of 7.50% is a reasonable estimate of investor-expected growth for the

17   Water Group. This value is within the array of analysts' forecasts of five-year earnings

18   per share growth rates and is above the midpoint of that data set. The reasonableness

19   of this growth rate is also supported by the earnings growth associated with the

20   continuation of elevated gas utility infrastructure spending.

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[7] Gordon, Gordon & Gould, "Choice Among Methods of Estimating Share Yield," The Journal of Portfolio Management (Spring 1989).

DIRECT TESTIMONY OF PAUL R. MOUL

1   Q.   **Are the dividend yield and growth components of the DCF adequate to accurately**

2   **depict the rate of return on common equity when it is used to calculate a utility's**

3   **weighted average overall cost of capital?**

4   A.   The components of the DCF model are adequate for that purpose only if the capital

5   structure ratios are measured by the market value of debt and equity. In the case of the

6   Water Group, average capital structure ratios are 27.83% long-term debt, 0.02%

7   preferred stock, and 72.15% common equity, as shown on Schedule 10. If book values

8   are used to compute the capital structure ratios, then a leverage adjustment is required.

9   Q.   **What is a leverage adjustment?**

10   A.   If a firm's capitalization, as measured by its stock price, diverges from its

11   capitalization, measured at book value, the potential exists for a financial risk

12   difference. Such a risk difference arises because a market-valued capitalization

13   contains more equity and less debt than a book-value capitalization and, therefore, has

14   less risk than the book-value capitalization. A leverage adjustment properly accounts

15   for the risk differential between market-value and book-value capital structures.

16   Q.   **Why is a leverage adjustment necessary?**

17   A.   In order to make the DCF results relevant to the capitalization measured at book value

18   (as is done for rate setting purposes), the market-derived cost rate must be adjusted to

19   account for this difference in financial risk. The only perspective that is important to

20   investors is the return that they can realize on the market value of their investment. As

21   I have measured the DCF, the simple yield (D/P) plus growth (g) provides a return

22   applicable strictly to the price (P) that an investor is willing to pay for a share of stock.

23   The need for the leverage adjustment arises when the results of the DCF model (k) are

23

1   to be applied to a capital structure that is different from the capital structure indicated

2   by the market price (P). From the market perspective, the financial risk of the Water

3   Group is accurately measured by the capital structure ratios calculated from the market-

4   valued capitalization of a firm. If the rate setting process utilized the market

5   capitalization ratios, then no additional analysis or adjustment would be required, and

6   the simple yield (D/P) plus growth (g) components of the DCF would satisfy the

7   financial risk associated with the market value of the equity capitalization. Because

8   the rate-setting process uses ratios calculated from a firm's book value capitalization,

9   further analysis is required to synchronize the financial risk of the book capitalization

10   with the required return on the book value of the firm's equity. This adjustment is

11   developed through precise mathematical calculations, using well recognized analytical

12   procedures that are widely accepted in the financial literature. To arrive at that return,

13   the rate of return on common equity is the unleveraged cost of capital (or equity return

14   at 100% equity) plus one or more terms reflecting the increase in financial risk resulting

15   from the use of leverage in the capital structure. The calculations presented in the lower

16   panel of data shown on Schedule 10, under the heading "M&M," provides a return of

17   8.12% when applicable to a capital structure with 100% common equity.

18   Q.   **Are there specific factors that influence market-to-book ratios that determine**

19   **whether the leverage adjustment should be made?**

20   A.   No. The leverage adjustment is not intended, nor was it designed, to address the reasons

21   that stock prices vary from book value. Hence, any observations concerning market

22   prices relative to book are not on point. The leverage adjustment deals with the issue

23   of financial risk and does not transform the DCF result to a book value return through

24

1   a market-to-book adjustment. Again, the leverage adjustment that I propose is based

2   on the fundamental financial precept that the cost of equity is equal to the rate of return

3   for an unleveraged firm (i.e., where the overall rate of return equates to the cost of

4   equity with a capital structure that contains 100% equity) plus the additional return

5   required for introducing debt and/or preferred stock leverage into the capital structure.

6   Further, as noted previously, the relatively high market prices of utility stocks

7   cannot be attributed solely to the notion that these companies are expected to earn a

8   return on the book value of equity that differs from their cost of equity determined from

9   stock market prices. Stock prices above book value are common for utility stocks, and

10   indeed the stock prices of non-regulated companies exceed book values by even greater

11   margins. It is difficult to accept that the vast majority of all firms operating in our

12   economy are generating returns far in excess of their cost of capital. Certainly, in our

13   free-market economy, competition should contain such "excesses" if they actually

14   existed.

15   Finally, the leverage adjustment adds stability to the final DCF cost rate. That

16   is to say, as the market capitalization increases relative to its book value, the leverage

17   adjustment increases while the simple yield (D/P) plus growth (g) result declines. The

18   reverse is also true: when the market capitalization declines, the leverage adjustment

19   also declines as the simple yield (D/P) plus growth (g) result increases.

20   **Q.   Is the leverage adjustment that you propose designed to transform the market**

21   **return into one that is designed to produce a particular market-to-book ratio?**

22   A.   No, it is not. What I label a "leverage adjustment" is merely a convenient way of

23   showing the amount that must be added to (or subtracted from) the result of the simple

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1   DCF model (i.e., D/P + g) when the DCF return applies to a capital structure used for

2   ratemaking that is computed with book-value weighting rather than market-value

3   weighting. Although I specify a separate factor, which I call the leverage adjustment,

4   there is no need to do so other than to identify this factor. If I expressed my return

5   solely in the context of the book value weighting that we use to calculate the weighted

6   average cost of capital and ignore the familiar D/P + g expression entirely, then a

7   separate element in the DCF cost of equity determination would not be needed to reflect

8   the differential in financial leverage between a market-value and book-value

9   capitalization. As shown in the bottom panel of data on Schedule 10, the equity return

10   applicable to the book value common equity ratio is equal to 8.12%, which is the return

11   for the Water Group appropriate for a capital structure with no debt (i.e., a 100% equity

12   ratio) plus 2.29% to compensate investors for the risk of a 40.08% debt ratio, which is

13   the debt ratio that I used for Palmetto. Under this approach, the parts sum to 10.41%

14   (8.12% + 2.29%), and there is no need to even address the cost of equity in terms of

15   D/P + g. To express this same return in the context of the familiar DCF model, I

16   summed the 1.94% dividend yield, the 7.50% growth rate, and 0.97% for the leverage

17   adjustment in order to arrive at the same 10.41% (1.94% + 7.50% + 0.97%) return. I

18   know of no means to mathematically solve for the 0.97% leverage adjustment by

19   expressing it in the terms of any particular relationship of market price to book value.

20   The 0.97% adjustment is merely a convenient way to compare the 10.41% return

21   computed using the Modigliani & Miller formulas to the 9.44% return generated by the

22   DCF model (i.e., D_1/P_0 + g, or the traditional form of the DCF shown on Schedule 7,

23   page 1) based on a market-value capital structure. A 9.44% return assigned to anything

26

1   other than the market value of equity cannot equate to a reasonable return on book

2   value that has higher financial risk. My point is that when we use a market-determined

3   cost of equity developed from the DCF model, it reflects a level of financial risk that is

4   different (in this case, lower) from the capital structure stated at book value. This

5   process has nothing to do with targeting any particular market-to-book ratio.

6   Q.   **Please provide the DCF return based upon your preceding discussion of dividend**

7   **yield, growth, and leverage.**

8   A.   As explained previously, I have utilized a six-month average dividend yield (D_1/P_0)

9   adjusted in a forward-looking manner for my DCF calculation. This dividend yield is

10   used in conjunction with the growth rate (g) previously developed. The DCF also

11   includes the leverage modification (lev.) required when the book value equity ratio is

12   used in determining the weighted average cost of capital in the rate-setting process

13   rather than the market value equity ratio related to the price of stock.

$$D_1/P_0 + \quad g \quad + \quad lev. \quad = \quad k$$

$$\text{Water Group} \quad 1.94\% + 7.50\% \quad + \quad 0.97\% \quad = \quad 10.41\%$$

14   The DCF result shown above represents the simplified (i.e., Gordon) form of

15   the model that contains a constant-growth assumption. I should reiterate, however, that

16   the DCF-indicated cost rate provides an explanation of the rate of return on common

17   stock market prices without regard to the prospect of a change in the price-earnings

18   multiple. An assumption that there will be no change in the price-earnings multiple is

19   not supported by the realities of the equity market because price-earnings multiples do

20   not remain constant. This is one of the constraints of this model that makes it important

21   to consider the results of other models when determining a company's cost of equity.

1   **RISK PREMIUM ANALYSIS**

2   **Q.   Please describe your use of the Risk Premium approach to determine the cost of**

3   **equity.**

4   A.   With the Risk Premium approach, the cost of equity capital is determined by corporate

5   bond yields plus a premium to account for the fact that common equity is exposed to

6   greater investment risk than debt capital. The result of my Risk Premium study is

7   shown on Schedule 1, page 2. That result is 10.50%.

8   **Q.   What long-term public utility debt cost rate did you use in your Risk Premium**

9   **analysis?**

10   A.   In my opinion, and as I will explain in more detail further in my testimony, a 3.75%

11   yield represents a reasonable estimate of the prospective yield on long-term A-rated

12   public utility bonds.

13   **Q.   What historical data are shown by the Moody's data?**

14   A.   I have analyzed the historical yields on the Moody's index of long-term public utility

15   debt as shown on Schedule 11, page 1. For the twelve months ended April 2021, the

16   average monthly yield on Moody's index of A-rated public utility bonds was 2.99%.

17   For the six and three-month periods ended April 2021, the yields were 3.06% and

18   3.28%, respectively. During the twelve-months ended April 2021 the range of the

19   yields on A-rated public utility bonds was 2.73% to 3.44%. Page 2 of Schedule 11

20   shows the long-run spread in yields between A-rated public utility bonds and long-term

21   Treasury bonds. As shown on page 3 of Schedule 11, the yields on A-rated public

22   utility bonds have exceeded those on Treasury bonds by 1.29% on a twelve-month

23   average basis, 1.10% on a six-month average basis, and 1.05% on a three-month

28

1   average basis.   Giving greater emphasis to the trend toward more narrow spreads,

2   1.00% represents a reasonable spread for the yield on A-rated public utility bonds over

3   Treasury bonds.

4   **Q.   What forecasts of interest rates have you considered in your analysis?**

5   A.   I have determined the prospective yield on A-rated public utility debt by using the Blue

6   Chip Financial Forecasts (Blue Chip) along with the spread in the yields that I describe

7   below. Blue Chip is a reliable authority and contains consensus forecasts of a variety

8   of interest rates compiled from a panel of banking, brokerage, and investment advisory

9   services. In early 1999, Blue Chip stopped publishing forecasts of yields on A-rated

10   public utility bonds because the Federal Reserve deleted these yields from its Statistical

11   Release H.15. To independently project a forecast of the yields on A-rated public

12   utility bonds, I have combined the forecast yields on long-term Treasury bonds

13   published on May 4, 2021, and a yield spread of 1.00%, derived from historical data.

14   **Q.   How have you used these data to project the yield on A-rated public utility bonds**

15   **for the purpose of your Risk Premium analyses?**

16   A.   Shown below is my calculation of the prospective yield on A-rated public utility bonds

17   using the building blocks discussed above, i.e., the Blue Chip forecast of Treasury bond

18   yields and the public utility bond yield spread. For comparative purposes, I also have

19   shown the Blue Chip forecasts of Aaa-rated and Baa-rated corporate bonds. These

20   forecasts are:

29

| Year | Quarter | Blue Chip Financial Forecasts | | 30-Year | A-rated Public Utility | |
| | | Corporate | | | | |
		Aaa-rated	Baa-rated	Treasury	Spread	Yield
2021	Second	3.0%	3.9%	2.4%	1.00%	3.40%
2021	Third	3.2%	4.0%	2.5%	1.00%	3.50%
2021	Fourth	3.3%	4.2%	2.6%	1.00%	3.60%
2022	First	3.3%	4.2%	2.7%	1.00%	3.70%
2022	Second	3.4%	4.3%	2.7%	1.00%	3.70%
2022	Third	3.4%	4.3%	2.8%	1.00%	3.80%

1 Q.   **Are there additional forecasts of interest rates that extend beyond those shown**

2   **above?**

3 A.   Yes. Twice yearly, Blue Chip provides long-term forecasts of interest rates. In its

4   December 1, 2020 publication, Blue Chip published longer-term forecasts of interest

5   rates, which were reported to be:

| | Blue Chip Financial Forecasts | | 30-Year |
| | Corporate | | |
Averages	Aaa-rated	Baa-rated	Treasury
2022-2026	3.6%	4.6%	2.8%
2027-2031	4.5%	5.4%	3.6%

6   The longer-term forecasts by Blue Chip suggest that interest rates will move up

7   from the levels revealed by the near-term forecasts. A 3.75% yield on A-rated public

8   utility bonds represents a reasonable benchmark for measuring the cost of equity in this

9   case. All the data I used to formulate my conclusion as to a prospective yield on A-

10   rated public utility debt are available to investors, who regularly rely upon those data

11   to make investment decisions.

12 Q.   **What equity risk premium have you determined for public utilities?**

13 A.   To develop an appropriate equity risk premium, I analyzed the results from 2021 SBBI

14   Yearbook, Stocks, Bonds, Bills and Inflation. My investigation reveals that the equity

30

1   risk premium varies according to the level of interest rates. That is to say, the equity

2   risk premium increases as interest rates decline, and it declines as interest rates increase.

3   This inverse relationship is revealed by the summary data presented below and shown

4   on Schedule 12, page 1.

Common Equity Risk Premiums

Low Interest Rates	6.63%
Average Across All Interest Rates	5.67%
High Interest Rates	4.69%

5   Based on my analysis of the historical data, the equity risk premium was 6.63% when

6   the marginal cost of long-term government bonds was low (i.e., 2.85%, which was the

7   average yield during periods of low rates). Conversely, when the yield on long-term

8   government bonds was high (i.e., 7.09% on average during periods of high interest

9   rates), the spread narrowed to 4.69%. Over the entire spectrum of interest rates, the

10   equity risk premium was 5.67% when the average government bond yield was 4.95%.

11   I have utilized a 6.75% equity risk premium. The equity risk premium of 6.75% that I

12   employed is near the risk premiums associated with low interest rates.

13   Q.   **What common equity cost rate did you determine based on your Risk Premium**

14   **analysis?**

15   A.   The cost of equity (i.e., k) is represented by the sum of the prospective yield for long-

16   term public utility debt (i.e., i), and the equity risk premium (i.e., RP), and the

17   adjustment for flotation costs (i.e., flot.). The Risk Premium approach provides a cost

18   of equity of:

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$$i \quad + \quad RP \quad = \quad k$$

Water Group   3.75%   +   6.75%   =   10.50%

1   **CAPITAL ASSET PRICING MODEL**

2   **Q.   How is the CAPM used to measure the cost of equity?**

3   A.   The CAPM uses the yield on a risk-free interest-bearing obligation plus a rate of return

4   premium that is proportional to the systematic risk of an investment. As shown on page

5   2 of Schedule 1, the result of the CAPM is 12.05%, excluding flotation costs, for the

6   Water Group. To compute the cost of equity with the CAPM, three components are

7   necessary a risk-free rate of return (Rf), the beta measure of systematic risk (β), and the

8   market risk premium (Rm-Rf) derived from the total return on the market of equities

9   reduced by the risk-free rate of return. The CAPM specifically accounts for differences

10   in systematic risk (i.e., market risk as measured by the beta) between an individual firm

11   or group of firms and the entire market of equities.

12   **Q.   What betas have you considered in the CAPM?**

13   A.   For my CAPM analysis, I initially considered the Value Line betas. As shown on page

14   2 of Schedule 3, the average beta is 0.78 for the Water Group.

15   **Q.   Did you use the Value Line betas in the CAPM determined cost of equity?**

16   A.   I used the Value Line betas as a foundation for the leverage adjusted betas that I used

17   in the CAPM. The betas must be reflective of the financial risk associated with the

18   rate-setting capital structure that is measured at book value. Therefore, Value Line

19   betas cannot be used directly in the CAPM, unless the cost rate developed using those

20   betas is applied to a capital structure measured with market values. To develop a

21   CAPM cost rate applicable to a book-value capital structure, the Value Line (market

32

1   value) betas have been unleveraged and re-leveraged for the book value common equity

2   ratios using the Hamada formula,[8] as follows:

$$\beta l = \beta u \left[1 + (1 - t) \, D/E + P/E \right]$$

4   where βl = the leveraged beta, βu = the unleveraged beta, t = income tax rate, D = debt

5   ratio, P = preferred stock ratio, and E = common equity ratio. The betas published by

6   Value Line have been calculated with the market price of stock and are related to the

7   market value capitalization. By using the formula shown above and the capital

8   structure ratios measured at market value, the beta would become 0.60 for the Water

9   Group if it employed no leverage and was 100% equity financed. Those calculations

10   are shown on Schedule 10 under the section labeled "Hamada," who is credited with

11   developing those formulas. With the unleveraged beta as a base, I calculated the

12   leveraged beta of 0.92 for the book value capital structure of Palmetto that contains

13   40.08% debt and 59.92% equity.

14   Q.   **What risk-free rate have you used in the CAPM?**

15   A.   As shown on page 1 of Schedule 13, I provided the historical yields on Treasury notes

16   and bonds. For the twelve months ended April 2021, the average yield on 30-year

17   Treasury bonds was 1.69%. For the six- and three-months ended April 2021, the yields

18   on 30-year Treasury bonds were 1.97% and 2.23%, respectively. During the twelve-

19   months ended April 2021, the range of the yields on 30-year Treasury bonds was 1.31%

20   to 2.34%. The low yields that existed during recent periods can be traced initially to

21   weakness in business fixed investment and exports due in part to the U.S.'s trade war

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[8] Robert S. Hamada, "The Effects of the Firm's Capital Structure on the Systematic Risk of Common Stocks" *The Journal of Finance* Vol. 27, No. 2, Papers and Proceedings of the Thirtieth Annual Meeting of the American Finance Association, New Orleans, Louisiana, December 27-29, 1971. (May 1972), pp. 435-452.

1   with China. Thereafter, extraordinary events associated with the COVID-19 pandemic

2   induced significant turmoil that jolted the capital markets in the February-May 2020

3   time frame. During this period, we saw abrupt reaction to the coronavirus pandemic

4   and significant declines in the price of crude oil. These events led to the end of the

5   record-setting 128-month economic expansion. As the recession unfolded in February

6   2020, the FOMC acted to address these disruptions. The FOMC continues to support

7   the money and capital markets during the recovery from the coronavirus pandemic.

8   Presently, the Fed Funds rate is near zero. It should be noted that a meaningful increase

9   in long-term treasury yields began in mid-February 2021 that was associated with the

10   expected emergence from the economic recession.

11   As shown on page 2 of Schedule 13, forecasts published by Blue Chip on May

12   4, 2021 indicate that the yields on long-term Treasury bonds are expected to be in the

13   range of 2.4% to 2.8% during the next six quarters. The longer-term forecasts described

14   previously show that the yields on 30-year Treasury bonds will average 2.8% from

15   2022 through 2026 and 3.6% from 2027 to 2031. For the reasons explained previously,

16   forecasts of interest rates should be emphasized at this time in selecting the risk-free

17   rate of return in CAPM. Hence, I have used a 2.75% risk-free rate of return for CAPM

18   purposes, which considers the Blue Chip forecasts.

19   Q.   **What market premium have you used in the CAPM?**

20   A.   As shown in the lower panel of data presented on Schedule 13, page 2 the market

21   premium is derived from historical data and the forecast returns. For the historically

22   based market premium, I have used the arithmetic mean obtained from the data

23   presented on Schedule 12, page 1. On that schedule, the market return was 12.06% on

1   large stocks during periods of low interest rates. During those periods, the yield on

2   long-term government bonds was 2.85% when interest rates were low. As such, I

3   carried over to Schedule 13, page 2, the average large common stock returns of 12.06%

4   and the average yield on long-term government bonds of 2.85%. The resulting market

5   premium is 9.21% (12.06% - 2.85%) based on historical data, as shown on Schedule

6   13, page 2. As also shown on Schedule 13, page 2, I calculated the forecast returns,

7   which show a 11.54% total market return. With this forecast, I calculated a market

8   premium of 8.79% (11.54% - 2.75%) using forecast data. The resulting market

9   premium applicable to the CAPM derived from these sources equals 9.00% (8.79% +

10   9.21% = 18.00% ÷ 2).

11 Q.   **Are there adjustments to the CAPM that are necessary to fully reflect the rate of**

12   **return on common equity?**

13 A.   Yes. The technical literature supports an adjustment relating to the size of the company

14   or portfolio for which the calculation is performed. As the size of a firm decreases, its

15   risk and required return increases. Moreover, in his discussion of the cost of capital,

16   Professor Brigham has indicated that smaller firms have higher capital costs than

17   otherwise similar larger firms. Also, the Fama/French study (see "The Cross-Section

18   of Expected Stock Returns"; The Journal of Finance, June 1992) established that the

19   size of a firm helps explain stock returns. In an October 15, 1995 article in Public

20   Utility Fortnightly, entitled "Equity and the Small-Stock Effect," it was demonstrated

21   that the CAPM could understate the cost of equity significantly according to a

22   company's size. Indeed, it was demonstrated in the SBBI Yearbook that the returns for

23   stocks in lower deciles (i.e., smaller stocks) had returns in excess of those shown by

DIRECT TESTIMONY OF PAUL R. MOUL

1   the simple CAPM. As noted previously, Palmetto is relatively smaller than the Water

2   Group. To recognize this fact, I used the mid-cap adjustment of 1.02%, as revealed on

3   page 3 of Schedule 13, for the CAPM calculation.

4   Q.   **What does your CAPM analysis show?**

5   A.   Using the 2.75% risk-free rate of return, the leverage adjusted beta of 0.92 for

6   Palmetto's capital structure, the 9.00% market premium, and the 1.02% size

7   adjustment, the following result is indicated.

$$Rf \quad + \quad \beta \quad x \ (\quad Rm\text{-}Rf \ ) + \quad size \quad = \quad k$$

Gas Group   2.75% + 0.92 x (9.00%) + 1.02% = 12.05%

8   **COMPARABLE EARNINGS APPROACH**

9   Q.   **What is the Comparable Earnings approach?**

10   A.   The Comparable Earnings approach estimates a fair return on equity by comparing

11   returns realized by non-regulated companies to returns that a public utility with similar

12   risks characteristics would need to realize in order to compete for capital. Because

13   regulation is a substitute for competitively determined prices, the returns realized by

14   non-regulated firms with comparable risks to a public utility provide useful insight into

15   investor expectations for public utility returns. The firms selected for the Comparable

16   Earnings approach should be companies whose prices are not subject to cost-based

17   price ceilings (i.e., non-regulated firms) so that circularity is avoided.

18   There are two avenues available to implement the Comparable Earnings

19   approach. One method involves the selection of another industry (or industries) with

20   comparable risks to the public utility in question, and the results for all companies

21   within that industry serve as a benchmark. The second approach requires the selection

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DIRECT TESTIMONY OF PAUL R. MOUL

1   of parameters that represent similar risk traits for the public utility and the comparable

2   risk companies. Using this approach, the business lines of the comparable companies

3   become unimportant. The latter approach is preferable with the further qualification

4   that the comparable risk companies exclude regulated firms in order to avoid the

5   circular reasoning implicit in the use of the achieved earnings/book ratios of other

6   regulated firms. The United States Supreme Court has held that:

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> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. Bluefield Water Works vs. Public Service Commission, 262 U.S. 668 (1923).

19   It is important to identify the returns earned by firms that compete for capital with a

20   public utility. This can be accomplished by analyzing the returns of non-regulated

21   firms that are subject to the competitive forces of the marketplace.

22

23 Q.   **Did you compare the results of your market-based models to the results indicated**

24   **by a Comparable Earnings approach?**

25 A.   Yes. I selected companies from The Value Line Investment Survey for Windows that

26   have six categories of comparability designed to reflect the risk of the Water Group.

27   These screening criteria were based upon the range as defined by the rankings of the

28   companies in the Water Group. The items considered were: Timeliness Rank, Safety

29   Rank, Financial Strength, Price Stability, Value Line betas, and Technical Rank. The

1   definition for these parameters is provided on Schedule 14, page 3. The identities of

2   the companies comprising the Comparable Earnings group and their associated

3   rankings within the ranges are identified on Schedule 14, page 1.

4   I relied upon Value Line data because they provide a comprehensive basis for

5   evaluating the risks of the comparable firms. As to the returns calculated by Value

6   Line for these companies, there is some downward bias in the figures shown on

7   Schedule 14, page 2, because Value Line computes the returns on year-end rather than

8   average book value. If average book values had been employed, the rates of return

9   would have been slightly higher. Nevertheless, these are the returns considered by

10   investors when taking positions in these stocks. Because many of the comparability

11   factors, as well as the published returns, are used by investors in selecting stocks, and

12   the fact that investors rely on the Value Line service to gauge returns, it is an

13   appropriate database for measuring comparable return opportunities.

14   Q.   **What data did you consider in your Comparable Earnings analysis?**

15   A.   I used both historical realized returns and forecasted returns for non-utility companies.

16   As noted previously, I have not used returns for utility companies in order to avoid the

17   circularity that arises from using regulatory-influenced returns to determine a regulated

18   return. It is appropriate to consider a relatively long measurement period in the

19   Comparable Earnings approach in order to cover conditions over an entire business

20   cycle. A ten-year period (five historical years and five projected years) is sufficient to

21   cover an average business cycle. Unlike the DCF and CAPM, the results of the

22   Comparable Earnings method can be applied directly to the book value capitalization.

23   In other words, the Comparable Earnings approach does not contain the potential

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1   misspecification contained in market models when the market capitalization and book

2   value capitalization diverge significantly. A point of demarcation was chosen to

3   eliminate the results of highly profitable enterprises, which the Bluefield case stated

4   were not the type of returns that a utility was entitled to earn. For this purpose, I used

5   20% as the point where those returns could be viewed as highly profitable and should

6   be excluded from the Comparable Earnings approach. The average historical rate of

7   return on book common equity was 12.4% using only the returns that were less than

8   20%, as shown on Schedule 14, page 2. The average forecasted rate of return as

9   published by Value Line is 13.2% also using values less than 20%, as provided on

10   Schedule 14, page 2. Using the average of these data my Comparable Earnings result

11   is 12.80%, as shown on Schedule 1, page 2.

CONCLUSION ON COST OF EQUITY

13   Q.   **What is your conclusion regarding the Company's cost of common equity?**

14   A.   Based upon the application of a variety of methods and models described previously,

15   it is my opinion that a reasonable rate of return on common equity is 10.95% for

16   Palmetto. It is essential that the Commission employ a variety of techniques to measure

17   the Company's cost of equity because of the limitations/infirmities that are inherent in

18   each method. In summary, the Company should be provided an opportunity to realize

19   a 10.95% rate of return on common equity so that its return satisfies the Hope and

20   Bluefield standards.

21   Q.   **Does this complete your Prepared Direct Testimony?**

22   A.   Yes. However, I reserve the right to supplement my testimony, if necessary, and to

23   respond to witnesses presented by other parties.

APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

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**EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE
AND QUALIFICATIONS**

3   I was awarded a degree of Bachelor of Science in Business Administration by

4   Drexel University in 1971. While at Drexel, I participated in the Cooperative Education

5   Program which included employment, for one year, with American Water Works Service

6   Company, Inc., as an internal auditor, where I was involved in the audits of several oper-

7   ating water companies of the American Water Works System and participated in the prep-

8   aration of annual reports to regulatory agencies and assisted in other general accounting

9   matters.

10   Upon graduation from Drexel University, I was employed by American Water

11   Works Service Company, Inc., in the Eastern Regional Treasury Department where my

12   duties included preparation of rate case exhibits for submission to regulatory agencies, as

13   well as responsibility for various treasury functions of the thirteen New England operating

14   subsidiaries.

15   In 1973, I joined the Municipal Financial Services Department of Betz Environ-

16   mental Engineers, a consulting engineering firm, where I specialized in financial studies

17   for municipal water and wastewater systems.

18   In 1974, I joined Associated Utility Services, Inc., now known as AUS Consultants.

19   I held various positions with the Utility Services Group of AUS Consultants, concluding

20   my employment there as a Senior Vice President.

21   In 1994, I formed P. Moul & Associates, an independent financial and regulatory

22   consulting firm. In my capacity as Managing Consultant and for the past forty-two years,

23   I have continuously studied the rate of return requirements for cost of service-regulated

24   firms. In this regard, I have supervised the preparation of rate of return studies, which were

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APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

1   employed, in connection with my testimony and in the past for other individuals. I have

2   presented direct testimony on the subject of fair rate of return, evaluated rate of return

3   testimony of other witnesses, and presented rebuttal testimony.

4   My studies and prepared direct testimony have been presented before thirty-seven

5   (37) federal, state and municipal regulatory commissions, consisting of: the Federal En-

6   ergy Regulatory Commission; state public utility commissions in Alabama, Alaska, Cali-

7   fornia, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa,

8   Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri,

9   New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania,

10   Rhode Island, South Carolina, Tennessee, Texas, Virginia, West Virginia, Wisconsin, and

11   the Philadelphia Gas Commission, and the Texas Commission on Environmental Quality.

12   My testimony has been offered in over 300 rate cases involving electric power, water dis-

13   tribution and transmission, resource recovery, solid waste collection and disposal, tele-

14   phone, wastewater, and water service utility companies. While my testimony has involved

15   principally fair rate of return and financial matters, I have also testified on capital alloca-

16   tions, capital recovery, cash working capital, income taxes, factoring of accounts receiva-

17   ble, and take-or-pay expense recovery. My testimony has been offered on behalf of mu-

18   nicipal and investor-owned public utilities and for the staff of a regulatory commission. I

19   have also testified at an Executive Session of the State of New Jersey Commission of In-

20   vestigation concerning the BPU regulation of solid waste collection and disposal.

21   I was a co-author of a verified statement submitted to the Interstate Commerce

22   Commission concerning the 1983 Railroad Cost of Capital (Ex Parte No. 452). I was also

23   co-author of comments submitted to the Federal Energy Regulatory Commission regarding

1   the Generic Determination of Rate of Return on Common Equity for Public Utilities in

2   1985, 1986 and 1987 (Docket Nos. RM85-19-000, RM86-12-000, RM87-35-000 and

3   RM88-25-000). Further, I have been the consultant to the New York Chapter of the Na-

4   tional Association of Water Companies, which represented the water utility group in the

5   Proceeding on Motion of the Commission to Consider Financial Regulatory Policies for

6   New York Utilities (Case 91-M-0509). I have also submitted comments to the Federal

7   Energy Regulatory Commission in its Notice of Proposed Rulemaking (Docket No. RM99-

8   2-000) concerning Regional Transmission Organizations and on behalf of the Edison Elec-

9   tric Institute in its intervention in the case of Southern California Edison Company (Docket

10   No. ER97-2355-000). Also, I was a member of the panel of participants at the Technical

11   Conference in Docket No. PL07-2 on the Composition of Proxy Groups for Determining

12   Gas and Oil Pipeline Return on Equity.

13   In late 1978, I arranged for the private placement of bonds on behalf of an investor-

14   owned public utility. I have assisted in the preparation of a report to the Delaware Public

15   Service Commission relative to the operations of the Lincoln and Ellendale Electric Com-

16   pany. I was also engaged by the Delaware P.S.C. to review and report on the proposed

17   financing and disposition of certain assets of Sussex Shores Water Company (P.S.C.

18   Docket Nos. 24-79 and 47-79). I was a co-author of a Report on Proposed Mandatory

19   Solid Waste Collection Ordinance prepared for the Board of County Commissioners of

20   Collier County, Florida.

21   I have been a consultant to the Bucks County Water and Sewer Authority concern-

22   ing rates and charges for wholesale contract service with the City of Philadelphia. My

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1   municipal consulting experience also included an assignment for Baltimore County, Mar-

2   yland, regarding the City/County Water Agreement for Metropolitan District customers

3   (Circuit Court for Baltimore County in Case 34/153/87-CSP-2636).

EXHIBIT PRM-1

<u>PALMETTO WASTEWATER RECLAMATION, INC.</u>

DOCKET NO 2021-153-S

EXHIBIT TO ACCOMPANY

THE DIRECT TESTIMONY OF
PAUL R. MOUL
WITH REGARD TO
COST OF CAPITAL

BEFORE

THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

September 2, 2021

Palmetto Wastewater Reclamation, Inc..
Index of Schedules

Palmetto Wastewater Reclamation, Inc.
Summary Cost of Capital

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	40.08%	3.79%	1.52%
Common Equity	59.92%	10.95%	6.56%
Total	100.00%		8.08%

Indicated levels of fixed charge coverage assuming that
the Company could actually achieve its overall cost of capital:

Pre-tax coverage of interest expense
24.9500% composite federal and state income tax rate
        (10.26% ÷ 1.52%)   6.75 x

Post-tax coverage of interest expense

Palmetto Wastewater Reclamation, Inc.
Cost of Equity
as of April 30, 2021

Discounted Cash Flow (DCF)	D_1/P_0 [1] +	g [2]	+	*lev.* [3]	=	k
Water Group	1.94% +	7.50%	+	0.97%	=	10.41%

Risk Premium (RP)		I [4]	+	RP [5]	=	k
Water Group		3.75%	+	6.75%	=	10.50%

Capital Asset Pricing Model (CAPM	Rf [6]	+	β [7]	$x\ (Rm\text{-}Rf$ [8]$)$ +	*size* [9]	=	k
Water Group	2.75%	+	0.92	x (9.00%) +	1.02%	=	12.05%

Comparable Earnings (CE) [10]	*Historical*	*Forecast*	*Average*
Comparable Earnings Group	12.4%	13.2%	12.80%

References [1] Schedule 7, page 1
[2] Schedule 9, page 1
[3] Schedule 10, page 1
[4] A-rated public utility bond yield comprised of a 2.75% risk-free rate of return (Schedule 13, page 2) and a yield spread of 1.00% (Schedule 11, page 3)
[5] Schedule 12, page 1
[6] Schedule 13, page 2
[7] Schedule 9, page 1
[8] Schedule 13, page 2
[9] Schedule 13, page 3
[10] Schedule 14, page 2

Palmetto Wastewater Reclamation, Inc.
Capitalization and Financial Statistics
2016-2020, Inclusive

	2020	2019	2018	2017	2016	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 10.5					
Short-Term Debt	$ -					
Total Capital	$ 10.5					
						Average
Capital Structure Ratios						
Based on Permanent Capital:						
Long-Term Debt	40.1%					40.1%
Common Equity [1]	59.9%					59.9%
	100.0%					100.0%
Based on Total Capital:						
Total Debt incl. Short Term	40.1%					40.1%
Common Equity [1]	59.9%					59.9%
	100.0%					100.0%
Operating Ratio [2]	58.9%	63.2%	59.2%	60.6%	60.5%	60.5%
Coverage excl. AFUDC [3]						
Pre-tax: All Interest Charges	3.80 x	1.81 x	1.48 x	1.70 x	2.82 x	2.32 x
Post-tax: All Interest Charges	3.43 x	1.81 x	1.02 x	1.36 x	2.26 x	1.98 x
Quality of Earnings & Cash Flow						
Effective Income Tax Rate	13.5%	0.0%	95.8%	49.0%	30.6%	37.8%
Internal Cash Generation/Construction [4]	139.5%	99.9%	48.4%	87.4%	84.4%	91.9%
Gross Cash Flow Interest Coverage [5]	3.97 x	1.78 x	0.62 x	1.04 x	2.71 x	2.02 x

See Page 2 for Notes.

Palmetto Wastewater Reclamation, Inc.
Capitalization and Financial Statistics
2016-2020, Inclusive

Notes:

(1)   Excluding the Transitional Funding Obligations that were issue for stranded generating assets, and whose debt service is covered through dedicated revenue collections.

(2)   Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.

(3)   Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.

(4)   Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.

(5)   Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.

(6)   Gross Cash Flow plus interest charges divided by interest charges.

(7)   Common dividend coverage is the relationship of internally-generated funds from operations after payment of preferred stock dividends to common dividends paid.

Source of Information: Annual Reports to the PUCO

Water Group
Capitalization and Financial Statistics [1]
2016-2020, Inclusive

	2020	2019	2018	2017	2016	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 4,107.0	$ 3,466.3	$ 2,855.0	$ 2,521.4	$ 2,383.0	
Short-Term Debt	$ 241.8	$ 142.1	$ 151.3	$ 163.3	$ 134.5	
Total Capital	$ 4,348.8	$ 3,608.4	$ 3,006.3	$ 2,684.7	$ 2,517.5	
Market-Based Financial Ratios						Average
Price-Earnings Multiple	30 x	39 x	30 x	28 x	26 x	30 x
Market/Book Ratio	311.6%	325.1%	299.2%	301.3%	269.6%	301.4%
Dividend Yield	2.0%	1.9%	2.1%	2.1%	2.3%	2.1%
Dividend Payout Ratio	56.9%	71.4%	60.6%	56.9%	57.2%	60.6%
Capital Structure Ratios						
Based on Permanent Capital:						
Long-Term Debt	50.5%	48.8%	45.7%	45.1%	45.6%	47.1%
Preferred Stock	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Common Equity [2]	49.4%	51.2%	54.3%	54.8%	54.3%	52.8%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Based on Total Capital:						
Total Debt incl. Short Term	53.1%	50.4%	48.1%	48.3%	47.9%	49.5%
Preferred Stock	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Common Equity [2]	46.9%	49.6%	51.8%	51.6%	52.1%	50.4%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [2]	10.5%	9.5%	10.0%	11.0%	10.7%	10.3%
Operating Ratio [3]	71.0%	71.3%	69.0%	68.0%	67.8%	69.4%
Coverage incl. AFUDC [4]						
Pre-tax: All Interest Charges	3.98 x	3.66 x	3.77 x	4.70 x	4.58 x	4.14 x
Post-tax: All Interest Charges	3.65 x	3.31 x	3.35 x	3.50 x	3.39 x	3.44 x
Overall Coverage: All Int. & Pfd. Div.	3.63 x	3.29 x	3.33 x	3.48 x	3.38 x	3.42 x
Coverage excl. AFUDC [4]						
Pre-tax: All Interest Charges	3.83 x	3.50 x	3.67 x	4.59 x	4.51 x	4.02 x
Post-tax: All Interest Charges	3.49 x	3.15 x	3.24 x	3.39 x	3.33 x	3.32 x
Overall Coverage: All Int. & Pfd. Div.	3.48 x	3.13 x	3.23 x	3.37 x	3.31 x	3.30 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	6.1%	8.7%	5.1%	4.8%	3.1%	5.6%
Effective Income Tax Rate	10.9%	14.9%	15.9%	32.4%	32.9%	21.4%
Internal Cash Generation/Construction [5]	50.3%	45.9%	50.8%	62.1%	68.9%	55.6%
Gross Cash Flow/ Avg. Total Debt [6]	17.1%	17.4%	20.3%	24.8%	24.7%	20.9%
Gross Cash Flow Interest Coverage [7]	5.24 x	4.76 x	5.18 x	6.00 x	5.82 x	5.40 x
Common Dividend Coverage [8]	3.28 x	2.92 x	3.30 x	3.86 x	3.94 x	3.46 x

See Page 2 for Notes.

Water Group
Capitalization and Financial Statistics
2016-2020, Inclusive

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group.
(2) Excluding Accumulated Other Comprehensive Income ("OCI") from the equity account.
(3) Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.
(4) Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.
(5) Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.
(6) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.
(7) Gross Cash Flow plus interest charges divided by interest charges.
(8) Common dividend coverage is the relationship of internally-generated funds from operations after payment of preferred stock dividends to common dividends paid.

Basis of Selection:
The Water Group companies have the following common characteristics: (i) they are listed in the "Water Utility Industry" section (basic and expanded editions) of The Value Line Investment Survey, and (ii) their stock is publicly traded.

Ticker	Company	Corporate Credit Ratings		Stock Traded	Value Line Beta
		Moody's	S&P		
AWR	American States Water	A2	A+	NYSE	0.65
AWK	American Water Works Co.	A3	A	NYSE	0.85
ARTNA	Artesian Resources Corp.	-	-	NASDAQ	0.75
CWT	California Water Serv. Grp.	-	A+	NYSE	0.65
WTRG	Essential Utilities, Inc.	-	A+	NASDAQ	0.95
MSEX	Middlesex Water Company	-	A	NASDAQ	0.70
SJW	SJW Corporation	-	A	NYSE	0.85
YORW	York Water Company	-	A-	NASDAQ	0.80
	Average	A3	A		0.78

Note: Ratings are those of utility subsidiaries

Source of Information: Utility COMPUSTAT
Moody's Investors Service
Standard & Poor's Corporation

Standard & Poor's Public Utilities
Capitalization and Financial Statistics [1]
2016-2020, Inclusive

	2020	2019	2018	2017	2016	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 38,743.7	$ 36,461.6	$ 32,871.6	$ 30,827.6	$ 29,173.1	
Short-Term Debt	$ 1,154.5	$ 1,221.9	$ 1,420.3	$ 1,076.1	$ 1,032.2	
Total Capital	$ 39,898.2	$ 37,683.5	$ 34,291.9	$ 31,903.7	$ 30,205.3	
						Average
Market-Based Financial Ratios						
Price-Earnings Multiple	22 x	20 x	21 x	20 x	21 x	21 x
Market/Book Ratio	218.5%	221.3%	204.7%	214.4%	196.0%	211.0%
Dividend Yield	3.6%	3.2%	3.5%	3.3%	3.5%	3.4%
Dividend Payout Ratio	77.8%	62.7%	68.7%	65.2%	74.6%	69.8%
Capital Structure Ratios						
Based on Permanent Captial:						
Long-Term Debt	58.1%	56.7%	55.0%	56.8%	56.6%	56.6%
Preferred Stock	2.6%	2.4%	2.5%	1.4%	1.9%	2.1%
Common Equity [2]	39.4%	41.0%	42.5%	41.8%	41.6%	41.3%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Based on Total Capital:						
Total Debt incl. Short Term	59.4%	58.1%	57.0%	58.4%	58.2%	58.2%
Preferred Stock	2.5%	2.3%	2.4%	1.4%	1.8%	2.1%
Common Equity [2]	38.1%	39.6%	40.7%	40.3%	40.1%	39.7%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [2]	10.2%	10.3%	10.3%	10.8%	9.7%	10.3%
Operating Ratio [3]	79.8%	79.3%	79.8%	77.0%	78.2%	78.8%
Coverage incl. AFUDC [4]						
Pre-tax: All Interest Charges	2.80 x	3.05 x	2.94 x	3.42 x	3.38 x	3.12 x
Post-tax: All Interest Charges	2.60 x	3.10 x	2.59 x	2.86 x	2.55 x	2.74 x
Overall Coverage: All Int. & Pfd. Div.	2.56 x	3.04 x	2.55 x	2.84 x	2.52 x	2.70 x
Coverage excl. AFUDC [4]						
Pre-tax: All Interest Charges	2.70 x	2.95 x	2.84 x	3.31 x	3.28 x	3.02 x
Post-tax: All Interest Charges	2.50 x	3.00 x	2.48 x	2.75 x	2.44 x	2.63 x
Overall Coverage: All Int. & Pfd. Div.	2.46 x	2.94 x	2.44 x	2.73 x	2.41 x	2.60 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	6.8%	6.0%	7.3%	7.3%	6.5%	6.8%
Effective Income Tax Rate	10.2%	12.2%	19.0%	28.2%	29.0%	19.7%
Internal Cash Generation/Construction [5]	58.6%	65.9%	66.2%	78.7%	78.0%	69.5%
Gross Cash Flow/ Avg. Total Debt [6]	15.9%	17.5%	17.4%	19.9%	20.5%	18.2%
Gross Cash Flow Interest Coverage [7]	4.90 x	4.97 x	4.98 x	5.57 x	5.54 x	5.19 x
Common Dividend Coverage [8]	3.52 x	5.56 x	4.80 x	4.33 x	4.31 x	4.50 x

See Page 2 for Notes.

Standard & Poor's Public Utilities
Capitalization and Financial Statistics
2016-2020, Inclusive

Notes:

(1)   All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group.

(2)   Excluding Accumulated Other Comprehensive Income ("OCI") from the equity account

(3)   Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.

(4)   Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.

(5)   Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.

(6)   Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) as a percentage of average total debt.

(7)   Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.

(8)   Common dividend coverage is the relationship of internally-generated funds from operations after payment of preferred stock dividends to common dividends paid.

Source of Information: Annual Reports to Shareholders
                        Utility COMPUSTAT

Standard & Poor's Public Utilities
Company Identities

	Ticker	Credit Rating [1]		Common Stock Traded	Value Line Beta
		Moody's	S&P		
Alliant Energy Corporation	LNT	Baa1	A-	NYSE	0.85
Ameren Corporation	AEE	Baa1	BBB+	NYSE	0.85
American Electric Power	AEP	Baa1	A-	NYSE	0.75
American Water Works	AWK	Baa1	A	NYSE	0.85
CenterPoint Energy	CNP	Baa1	BBB+	NYSE	1.15
CMS Energy	CMS	A3	A-	NYSE	0.80
Consolidated Edison	ED	Baa1	A-	NYSE	0.75
Dominion Energy	D	A2	BBB+	NYSE	0.80
DTE Energy Co.	DTE	A2	A-	NYSE	0.95
Duke Energy	DUK	A1	BBB+	NYSE	0.85
Edison Int'l	EIX	Baa2	BBB	NYSE	0.95
Entergy Corp.	ETR	Baa1	A-	NYSE	0.95
Evergy, Inc.	EVRG	Baa1	A-	NYSE	1.00
Eversource	ES	A3	A	NYSE	0.90
Exelon Corp.	EXC	A2	BBB+	NYSE	0.95
FirstEnergy Corp.	FE	A3	BB+	NYSE	0.85
NextEra Energy Inc.	NEE	A1	A	NYSE	0.90
NiSource Inc.	NI	Baa2	BBB+	NYSE	0.85
NRG Energy Inc.	NRG	Ba1	BB+	NYSE	1.25
Pinnacle West Capital	PNW	A2	A-	NYSE	0.90
PPL Corp.	PPL	A3	A-	NYSE	1.15
Public Serv. Enterprise Inc.	PEG	A2	A-	NYSE	0.90
Sempra Energy	SRE	Baa1	BBB+	NYSE	1.00
Southern Co.	SO	Baa1	A-	NYSE	0.90
WEC Energy Corp.	WEC	A2	A-	NYSE	0.80
Xcel Energy Inc	XEL	A2	A-	NYSE	0.80
Average for S&P Utilities		A3	BBB+		0.91

Note: [1] Ratings are those of utility subsidiaries

Source of Information: SNL Financial LLC
Standard & Poor's Stock Guide
Value Line Investment Survey for Windows

Palmetto Wastewater Reclamation, Inc.
Investor-provided Capitalization
At December 31, 2020

	Amount Outstanding	Ratios
Long Term Debt	$ 4,228,281	40.08%
Common Equity	6,321,572	59.92%
Total Capital Employed	$ 10,549,853	100.00%

Source of information: Company provided data

Palmetto Wastewater Reclamation, Inc.
Long-term Debt Outstanding
At December 31, 2020

Interest Rate	Amount Outstanding	Annualized Debt Service	Embedded Cost of Debt
3.79%	$ 4,228,281	$ 160,252	3.79%

Source of information: Company provided data

Monthly Dividend Yields for
Water Group
for the Twelve Months Ending April 2021

Company	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	12-Month Average	6-Month Average	3-Month Average
American States Water Co (AWR)	1.49%	1.55%	1.75%	1.76%	1.79%	1.80%	1.82%	1.69%	1.74%	1.84%	1.78%	1.70%			
American Water Works Co Inc (AWK)	1.73%	1.71%	1.50%	1.56%	1.52%	1.47%	1.44%	1.44%	1.39%	1.55%	1.47%	1.55%			
Artesian Resource Corp Class A (ARTNA)	2.65%	2.76%	2.87%	2.84%	2.91%	2.94%	2.79%	2.79%	2.53%	2.78%	2.62%	2.60%			
California Water Service Group (CWT)	1.81%	1.79%	1.82%	1.88%	1.96%	1.92%	1.72%	1.58%	1.69%	1.68%	1.64%	1.57%			
Essential Utilities, Inc. (WTRG)	2.14%	2.23%	2.22%	2.36%	2.50%	2.45%	2.22%	2.13%	2.18%	2.39%	2.25%	2.14%			
Middlesex Water Co (MSEX)	1.51%	1.53%	1.61%	1.60%	1.65%	1.71%	1.59%	1.51%	1.37%	1.59%	1.38%	1.33%			
SJW Corp (SJW)	2.04%	2.07%	2.06%	2.05%	2.11%	2.12%	1.95%	1.85%	2.07%	2.17%	2.17%	2.08%			
The York Water Co (YORW)	1.63%	1.50%	1.56%	1.58%	1.71%	1.78%	1.67%	1.61%	1.73%	1.81%	1.53%	1.46%			
Average	1.90%	1.89%	1.92%	1.95%	2.02%	2.02%	1.90%	1.83%	1.84%	1.98%	1.85%	1.80%	1.91%	1.87%	1.88%

Note:

Monthly dividend yields are calculated by dividing the annualized quarterly dividend by the month-end closing stock price adjusted by the fraction of the ex-dividend.

Source of Information:

http://performance.morningstar.com/stock/performance-return
http://www.nasdaq.com

Forward-looking Dividend Yield

	1/2 Growth	D_0/P_0	(.5g)	D_1/P_0	
		1.87%	1.037500	1.94%	$K = \dfrac{D_0(1+g)^0 + D_0(1+g)^0 + D_0(1+g)^1 + D_0(1+g)^1}{P_0} + g$
	Discrete	D_0/P_0	Adj.	D_1/P_0	
		1.87%	1.046451	1.96%	$K = \dfrac{D_0(1+g)^{.25} + D_0(1+g)^{.50} + D_0(1+g)^{.75} + D_0(1+g)^{1.00}}{P_0} + g$
	Quarterly	D_0/P_0	Adj.	D_1/P_0	
		0.4671%	1.018245	1.92%	$K = \left[\left(1 + \dfrac{D_0(1+g)^{.25}}{P_0} \right)^4 - 1 \right] + g$
	Average			1.94%	
	Growth rate			7.50%	
	K			9.44%	

Historical Growth Rates
Earnings Per Share, Dividends Per Share,
Book Value Per Share, and Cash Flow Per Share

Company	Earnings per Share Value Line		Dividends per Share Value Line		Book Value per Share Value Line		Cash Flow per Share Value Line	
	5 Year	10 Year	5 Year	10 Year	5 Year	10 Year	5 Year	10 Year
American States Water	5.50%	9.00%	7.50%	8.50%	5.00%	5.50%	3.00%	5.50%
American Water Works Co., Inc.	8.00%	10.50%	11.50%	11.00%	4.50%	3.50%	7.00%	8.00%
Artesian Res. Corp.	8.50%	-	3.00%	-	4.00%	-	6.50%	-
California Water Serv. Grp.	8.00%	5.00%	4.00%	3.00%	5.00%	5.00%	8.00%	6.00%
Essential Utilities, Inc.	-1.50%	5.50%	7.50%	7.50%	11.50%	9.50%	1.00%	4.50%
Middlesex Water Company	12.50%	9.00%	5.00%	3.00%	8.00%	5.50%	10.50%	7.50%
SJW Corporation	-0.50%	7.00%	10.00%	6.00%	12.50%	8.50%	2.00%	5.50%
York Water Company	6.00%	6.00%	4.00%	3.00%	4.00%	4.50%	5.50%	6.00%
Average	5.81%	7.43%	6.56%	6.00%	6.81%	6.00%	5.44%	6.14%

Source of Information: Value Line Investment Survey, April 9, 2021

Earnings Per Share, Dividends Per Share,
Book Value Per Share, and Cash Flow Per Share

Water Group	I/B/E/S First Call	Zacks	Value Line				
			Earnings Per Share	Dividends Per Share	Book Value Per Share	Cash Flow Per Share	Percent Retained to Common Equity
American States Water	5.20%	NA	6.50%	9.50%	5.50%	7.00%	4.50%
American Water Works	8.60%	8.10%	8.50%	8.50%	5.00%	6.50%	4.50%
Artesian Resources Corp.	4.00%	NA	-	-	-	-	-
California Water Serv. Grp.	11.70%	NA	6.50%	6.50%	4.00%	2.00%	5.50%
Essential Utilities, Inc.	6.40%	6.20%	10.00%	7.50%	4.50%	6.50%	2.00%
Middlesex Water Company	2.70%	NA	4.50%	5.50%	2.50%	3.50%	6.50%
SJW Corporation	7.00%	NA	13.00%	6.00%	4.50%	4.50%	4.50%
York Water Company	4.90%	NA	6.50%	6.00%	4.00%	6.50%	5.00%
Average	6.31%	7.15%	7.93%	7.07%	4.29%	5.21%	4.64%

Source of Information :

Yahoo First Call, May 30, 2018
Zacks, May 30, 2018
Morningstar, May 30, 2018
Value Line, April 13, 2018

Water Group
Financial Risk Adjustment

			American States Water Co (NYSE:AWR)	American Water Works Co. (NYSE:AWK)	Artesian Resources Corp (NDS:ARTNA)	California Water Service Group (NYSE:CWT)	Essential Utilities, Inc. (NYSE:WTRG)	Middlesex Water Co. (NDS:MSEX)	SJW Corp (NYSE:SJW)	The York Water Company (NDS:YORW)	Average
Fiscal Year			12/31/20	12/31/20	12/31/20	12/31/20	12/31/20	12/31/20	12/31/20	12/31/20	
Capitalization at Fair Values											
Debt(D)			$559,752	$11,807,000	$171,374	$944,447	$6,386,030	$288,795	$1,570,727	$151,000	2,732,391
Preferred(P)			0	7,000	0	0	0	2,084	0	0	1,136
Equity(E)			2,933,053	27,823,880	348,049	2,719,546	11,604,515	1,266,268	1,980,686	608,634	6,160,579
Total			$3,492,805	$39,637,880	$519,423	$3,663,993	$17,970,545	$1,557,147	$3,551,413	$759,634	8,894,105
Capital Structure Ratios											
Debt(D)			16.03%	29.79%	32.99%	25.78%	35.42%	18.55%	44.23%	19.88%	27.83%
Preferred(P)			0.00%	0.02%	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.02%
Equity(E)			83.97%	70.20%	67.01%	74.22%	64.58%	81.32%	55.77%	80.12%	72.15%
Total			100.00%	100.01%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Common Stock											
Issued			36,889.103	186,466.707	9,386.429	50,334.000	248,571.355	17,473.000	28,556.605	13,060.817	
Treasury			0.000	5,168.215	0.000	0.000	3,180.887	0.000	0.000	0.000	
Outstanding			36,889.103	181,298.492	9,386.429	50,334.000	245,390.468	17,473.000	28,556.605	13,060.817	
Market Price`			$79.51	$153.47	$37.08	$54.03	$47.29	$72.47	$69.36	$46.60	
Capitalization at Carrying Amounts											
Debt(D)			$444,271	$9,656,000	$144,090	$786,227	$5,630,243	$277,287	$1,352,320	$126,570	4,228
Preferred(P)			0	5,000	0	0	0	2,084	0	0	0
Equity(E)			641,673	6,454,000	169,426	921,344	4,683,877	346,208	917,160	143,252	6,322
Total			$1,085,944	$16,115,000	$313,516	$1,707,571	$10,314,120	$625,559	$2,269,480	$269,822	10,550
Capital Structure Ratios											
Debt(D)			40.91%	59.92%	45.96%	46.04%	54.59%	44.32%	59.59%	46.91%	40.08%
Preferred(P)			0.00%	0.03%	0.00%	0.00%	0.00%	0.33%	0.00%	0.00%	0.00%
Equity(E)			59.09%	40.05%	54.04%	53.96%	45.41%	55.34%	40.41%	53.09%	59.92%
Total			100.00%	100.00%	100.00%	100.00%	100.00%	99.99%	100.00%	100.00%	100.00%
Betas	Value Line		0.65	0.85	0.75	0.65	0.95	0.70	0.85	0.80	0.78

Hamada								
	BI	=	Bu	[1+	(1 - t)	D/E	+	P/E
	0.78	=	Bu	[1+	(1-0.21)	0.3857	+	0.0003
	0.78	=	Bu	[1+	0.79	0.3857	+	0.0003
	0.78	=	Bu	1.3050				
	0.60	=	Bu					

Hamada								
	BI	=	0.60	[1+	(1 - t)	D/E	+	P/E
	BI	=	0.60	[1+	0.79	0.6669	+	0.0000
	BI	=	0.60	1.5284				
	BI	=	0.92					

M&M																										
	ku	=	ke	-	(((	ku	-	i	)			1-t	)		D	/	E	)-(	ku	-	d	)	P	/	E	
	6.12%	=	9.44%	-	(((	8.12%	-	3.79%	)			0.79	)		27.83%	/	72.15%	)-(	8.12%	- 5.68%	)		0.02%	/	72.15%	
	6.12%	=	9.44%	-	(((	4.33%			)			0.79	)		0.3857			)-(	2.44%		)		0.0003			
	8.12%	=	9.44%	-	((	3.42%			)						0.3857			)-(	2.44%		)		0.0003			
	8.12%	=	9.44%			1.32%												-	0.00%							

M&M																										
	ke	=	ku	+	(((	ku	-	i	)			1-t	)		D	/	E	)+(	ku	-	d	)	P	/	E	
	10.41%	=	8.12%	+	(((	8.12%	-	3.79%	)			0.79	)		40.08%	/	59.92%	)+(	6.12%	- 5.68%	)		0.00%	/	59.92%	
	10.41%	=	8.12%	+	(((	4.33%			)			0.79	)		0.6689			)+(	2.44%		)		0.0000			
	10.41%	=	8.12%	+	((	3.42%			)						0.6689			)+(	2.44%		)		0.0000			
	10.41%	=	6.12%	+		2.29%												+	0.00%							

Interest Rates for Investment Grade Public Utility Bonds
Yearly for 2016-2020
and the Twelve Months Ended April 2021

Years	Aa Rated	A Rated	Baa Rated	Average
2016	3.73%	3.93%	4.68%	4.11%
2017	3.82%	4.00%	4.38%	4.07%
2018	4.09%	4.25%	4.67%	4.34%
2019	3.61%	3.77%	4.19%	3.86%
2020	2.79%	3.02%	3.39%	3.07%
Five-Year Average	3.61%	3.79%	4.26%	3.89%

Months

	Aa Rated	A Rated	Baa Rated	Average
May-20	2.89%	3.14%	3.63%	3.22%
Jun-20	2.80%	3.07%	3.44%	3.10%
Jul-20	2.46%	2.74%	3.09%	2.77%
Aug-20	2.49%	2.73%	3.06%	2.76%
Sep-20	2.62%	2.84%	3.17%	2.88%
Oct-20	2.72%	2.95%	3.27%	2.98%
Nov-20	2.63%	2.85%	3.17%	2.89%
Dec-20	2.57%	2.77%	3.05%	2.80%
Jan-21	2.73%	2.91%	3.18%	2.94%
Feb-21	2.93%	3.09%	3.37%	3.13%
Mar-21	3.27%	3.44%	3.72%	3.48%
Apr-21	3.13%	3.30%	3.57%	3.33%
Twelve-Month Average	2.77%	2.99%	3.31%	3.02%
Six-Month Average	2.88%	3.06%	3.34%	3.09%
Three-Month Average	3.11%	3.28%	3.55%	3.31%

Yields on
A-rated Public Utility Bonds and
Spreads over 30-Year Treasuries
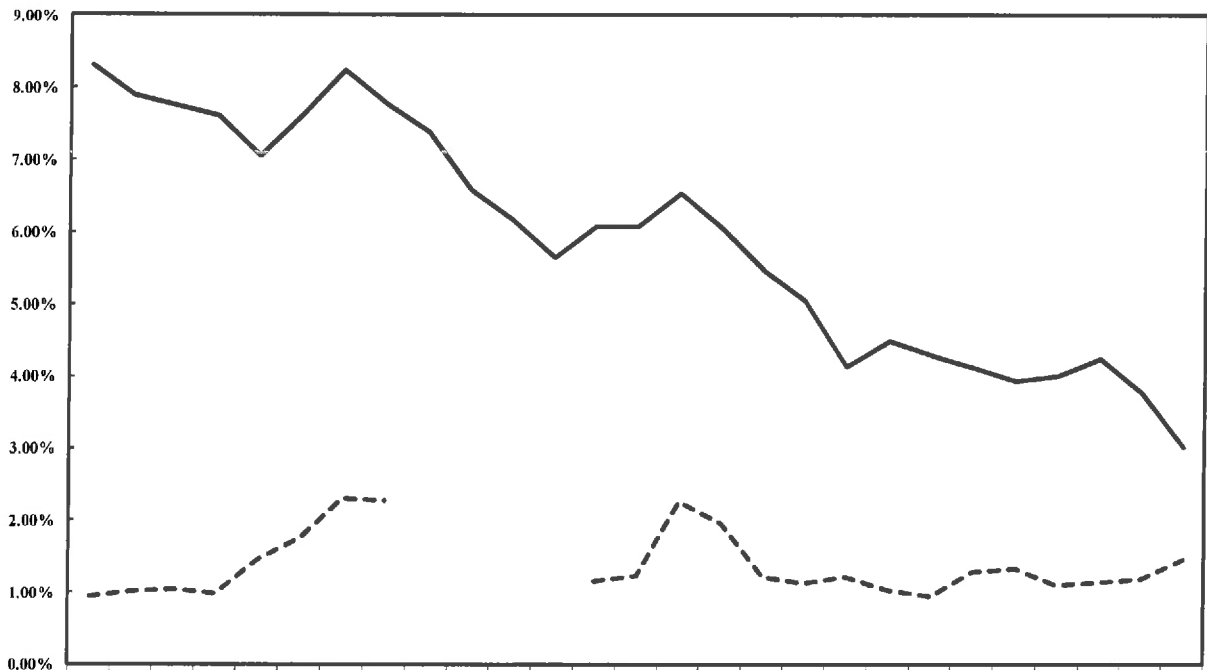
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
A-rated Public Utility	8.31	7.89	7.75	7.60	7.04	7.62	8.24	7.76	7.37	6.58	6.16	5.65	6.07	6.07	6.53	6.04	5.46	5.04	4.13	4.48	4.28	4.12	3.93	4.00	4.25	3.77	3.02
Spread vs. 30-year	0.94	1.01	1.04	0.99	1.46	1.75	2.30	2.27					1.16	1.23	2.25	1.96	1.21	1.13	1.21	1.03	0.94	1.28	1.33	1.10	1.14	1.19	1.46

A rated Public Utility Bonds over 30-Year Treasuries

Year	A-rated Public Utility	30-Year Treasuries Yield	30-Year Treasuries Spread
Jan-99	6.97%	5.16%	1.81%
Feb-99	7.09%	5.37%	1.72%
Mar-99	7.26%	5.58%	1.68%
Apr-99	7.22%	5.55%	1.67%
May-99	7.47%	5.81%	1.66%
Jun-99	7.74%	6.04%	1.70%
Jul-99	7.71%	5.98%	1.73%
Aug-99	7.91%	6.07%	1.84%
Sep-99	7.93%	6.07%	1.86%
Oct-99	8.06%	6.26%	1.80%
Nov-99	7.94%	6.15%	1.79%
Dec-99	8.14%	6.35%	1.79%
Jan-00	8.35%	6.63%	1.72%
Feb-00	8.25%	6.23%	2.02%
Mar-00	8.28%	6.05%	2.23%
Apr-00	8.29%	5.85%	2.44%
May-00	8.70%	6.15%	2.55%
Jun-00	8.36%	5.93%	2.43%
Jul-00	8.25%	5.85%	2.40%
Aug-00	8.13%	5.72%	2.41%
Sep-00	8.23%	5.83%	2.40%
Oct-00	8.14%	5.80%	2.34%
Nov-00	8.11%	5.78%	2.33%
Dec-00	7.84%	5.49%	2.35%
Jan-01	7.80%	5.54%	2.26%
Feb-01	7.74%	5.45%	2.29%
Mar-01	7.68%	5.34%	2.34%
Apr-01	7.94%	5.65%	2.29%
May-01	7.99%	5.78%	2.21%
Jun-01	7.85%	5.67%	2.18%
Jul-01	7.78%	5.61%	2.17%
Aug-01	7.59%	5.48%	2.11%
Sep-01	7.75%	5.48%	2.27%
Oct-01	7.63%	5.32%	2.31%
Nov-01	7.57%	5.12%	2.45%
Dec-01	7.83%	5.48%	2.35%
Jan-02	7.66%	5.45%	2.21%
Feb-02	7.54%	5.40%	2.14%
Mar-02	7.76%		
Apr-02	7.57%		
May-02	7.52%		
Jun-02	7.42%		
Jul-02	7.31%		
Aug-02	7.17%		
Sep-02	7.08%		
Oct-02	7.23%		
Nov-02	7.14%		
Dec-02	7.07%		
Jan-03	7.07%		
Feb-03	6.93%		
Mar-03	6.79%		
Apr-03	6.64%		
May-03	6.36%		
Jun-03	6.21%		
Jul-03	6.57%		
Aug-03	6.78%		
Sep-03	6.56%		
Oct-03	6.43%		
Nov-03	6.37%		
Dec-03	6.27%		
Jan-04	6.15%		
Feb-04	6.15%		
Mar-04	5.97%		
Apr-04	6.35%		
May-04	6.62%		
Jun-04	6.46%		
Jul-04	6.27%		
Aug-04	6.14%		
Sep-04	5.98%		
Oct-04	5.94%		
Nov-04	5.97%		
Dec-04	5.92%		

Year	A-rated Public Utility	30-Year Treasuries Yield	30-Year Treasuries Spread
Jan-05	5.78%		
Feb-05	5.61%		
Mar-05	5.83%		
Apr-05	5.64%		
May-05	5.53%		
Jun-05	5.40%		
Jul-05	5.51%		
Aug-05	5.50%		
Sep-05	5.52%		
Oct-05	5.79%		
Nov-05	5.88%		
Dec-05	5.80%		
Jan-06	5.75%		
Feb-06	5.82%	4.54%	1.28%
Mar-06	5.98%	4.73%	1.25%
Apr-06	6.29%	5.06%	1.23%
May-06	6.42%	5.20%	1.22%
Jun-06	6.40%	5.15%	1.25%
Jul-06	6.37%	5.13%	1.24%
Aug-06	6.20%	5.00%	1.20%
Sep-06	6.00%	4.85%	1.15%
Oct-06	5.98%	4.85%	1.13%
Nov-06	5.80%	4.69%	1.11%
Dec-06	5.81%	4.68%	1.13%
Jan-07	5.96%	4.85%	1.11%
Feb-07	5.90%	4.82%	1.08%
Mar-07	5.85%	4.72%	1.13%
Apr-07	5.97%	4.87%	1.10%
May-07	5.99%	4.90%	1.09%
Jun-07	6.30%	5.20%	1.10%
Jul-07	6.25%	5.11%	1.14%
Aug-07	6.24%	4.93%	1.31%
Sep-07	6.18%	4.79%	1.39%
Oct-07	6.11%	4.77%	1.34%
Nov-07	5.97%	4.52%	1.45%
Dec-07	6.16%	4.53%	1.63%
Jan-08	6.02%	4.33%	1.69%
Feb-08	6.21%	4.52%	1.69%
Mar-08	6.21%	4.39%	1.82%
Apr-08	6.29%	4.44%	1.85%
May-08	6.28%	4.60%	1.68%
Jun-08	6.38%	4.69%	1.69%
Jul-08	6.40%	4.57%	1.83%
Aug-08	6.37%	4.50%	1.87%
Sep-08	6.49%	4.27%	2.22%
Oct-08	7.56%	4.17%	3.39%
Nov-08	7.60%	4.00%	3.60%
Dec-08	6.52%	2.87%	3.65%
Jan-09	6.39%	3.13%	3.26%
Feb-09	6.30%	3.59%	2.71%
Mar-09	6.42%	3.64%	2.78%
Apr-09	6.48%	3.76%	2.72%
May-09	6.49%	4.23%	2.26%
Jun-09	6.20%	4.52%	1.68%
Jul-09	5.97%	4.41%	1.56%
Aug-09	5.71%	4.37%	1.34%
Sep-09	5.53%	4.19%	1.34%
Oct-09	5.55%	4.19%	1.36%
Nov-09	5.64%	4.31%	1.33%
Dec-09	5.79%	4.49%	1.30%
Jan-10	5.77%	4.60%	1.17%
Feb-10	5.87%	4.62%	1.25%
Mar-10	5.84%	4.64%	1.20%
Apr-10	5.81%	4.69%	1.12%
May-10	5.50%	4.29%	1.21%
Jun-10	5.46%	4.13%	1.33%
Jul-10	5.26%	3.99%	1.27%
Aug-10	5.01%	3.80%	1.21%
Sep-10	5.01%	3.77%	1.24%
Oct-10	5.10%	3.87%	1.23%
Nov-10	5.37%	4.19%	1.18%
Dec-10	5.56%	4.42%	1.14%

Year	A-rated Public Utility	30-Year Treasuries Yield	30-Year Treasuries Spread
Jan-11	5.57%	4.52%	1.05%
Feb-11	5.68%	4.65%	1.03%
Mar-11	5.56%	4.51%	1.05%
Apr-11	5.55%	4.50%	1.05%
May-11	5.32%	4.29%	1.03%
Jun-11	5.26%	4.23%	1.03%
Jul-11	5.27%	4.27%	1.00%
Aug-11	4.69%	3.65%	1.04%
Sep-11	4.48%	3.18%	1.30%
Oct-11	4.52%	3.13%	1.39%
Nov-11	4.25%	3.02%	1.23%
Dec-11	4.33%	2.98%	1.35%
Jan-12	4.34%	3.03%	1.31%
Feb-12	4.36%	3.11%	1.25%
Mar-12	4.48%	3.28%	1.20%
Apr-12	4.40%	3.18%	1.22%
May-12	4.20%	2.93%	1.27%
Jun-12	4.08%	2.70%	1.38%
Jul-12	3.93%	2.59%	1.34%
Aug-12	4.00%	2.77%	1.23%
Sep-12	4.02%	2.88%	1.14%
Oct-12	3.91%	2.90%	1.01%
Nov-12	3.84%	2.80%	1.04%
Dec-12	4.00%	2.88%	1.12%
Jan-13	4.15%	3.08%	1.07%
Feb-13	4.18%	3.17%	1.01%
Mar-13	4.20%	3.16%	1.04%
Apr-13	4.00%	2.93%	1.07%
May-13	4.17%	3.11%	1.06%
Jun-13	4.53%	3.40%	1.13%
Jul-13	4.68%	3.61%	1.07%
Aug-13	4.73%	3.76%	0.97%
Sep-13	4.80%	3.79%	1.01%
Oct-13	4.70%	3.68%	1.02%
Nov-13	4.77%	3.80%	0.97%
Dec-13	4.81%	3.89%	0.92%
Jan-14	4.63%	3.77%	0.86%
Feb-14	4.53%	3.66%	0.87%
Mar-14	4.51%	3.62%	0.89%
Apr-14	4.41%	3.52%	0.89%
May-14	4.26%	3.39%	0.87%
Jun-14	4.29%	3.42%	0.87%
Jul-14	4.23%	3.33%	0.90%
Aug-14	4.13%	3.20%	0.93%
Sep-14	4.24%	3.26%	0.98%
Oct-14	4.06%	3.04%	1.02%
Nov-14	4.09%	3.04%	1.05%
Dec-14	3.95%	2.83%	1.12%
Jan-15	3.58%	2.46%	1.12%
Feb-15	3.67%	2.57%	1.10%
Mar-15	3.74%	2.63%	1.11%
Apr-15	3.75%	2.59%	1.16%
May-15	4.17%	2.96%	1.21%
Jun-15	4.39%	3.11%	1.28%
Jul-15	4.40%	3.07%	1.33%
Aug-15	4.25%	2.86%	1.39%
Sep-15	4.39%	2.95%	1.44%
Oct-15	4.29%	2.89%	1.40%
Nov-15	4.40%	3.03%	1.37%
Dec-15	4.35%	2.97%	1.38%
Jan-16	4.27%	2.86%	1.41%
Feb-16	4.11%	2.62%	1.49%
Mar-16	4.16%	2.68%	1.48%
Apr-16	4.00%	2.62%	1.38%
May-16	3.93%	2.63%	1.30%
Jun-16	3.78%	2.45%	1.33%
Jul-16	3.57%	2.23%	1.34%
Aug-16	3.59%	2.26%	1.33%
Sep-16	3.66%	2.35%	1.31%
Oct-16	3.77%	2.50%	1.27%
Nov-16	4.08%	2.86%	1.22%
Dec-16	4.27%	3.11%	1.16%

Year	A-rated Public Utility	30-Year Treasuries Yield	30-Year Treasuries Spread
Jan-17	4.14%	3.02%	1.12%
Feb-17	4.18%	3.03%	1.15%
Mar-17	4.23%	3.08%	1.15%
Apr-17	4.12%	2.94%	1.18%
May-17	4.12%	2.96%	1.16%
Jun-17	3.94%	2.80%	1.14%
Jul-17	3.99%	2.88%	1.11%
Aug-17	3.86%	2.80%	1.06%
Sep-17	3.87%	2.78%	1.09%
Oct-17	3.91%	2.88%	1.03%
Nov-17	3.83%	2.80%	1.03%
Dec-17	3.79%	2.77%	1.02%
Jan-18	3.86%	2.88%	0.98%
Feb-18	4.09%	3.13%	0.96%
Mar-18	4.13%	3.09%	1.04%
Apr-18	4.17%	3.07%	1.10%
May-18	4.28%	3.13%	1.15%
Jun-18	4.27%	3.05%	1.22%
Jul-18	4.27%	3.01%	1.26%
Aug-18	4.26%	3.04%	1.22%
Sep-18	4.32%	3.15%	1.17%
Oct-18	4.45%	3.34%	1.11%
Nov-18	4.52%	3.36%	1.16%
Dec-18	4.37%	3.10%	1.27%
Jan-19	4.35%	3.04%	1.31%
Feb-19	4.25%	3.02%	1.23%
Mar-19	4.16%	2.98%	1.18%
Apr-19	4.08%	2.94%	1.14%
May-19	3.98%	2.82%	1.16%
Jun-19	3.82%	2.57%	1.25%
Jul-19	3.69%	2.57%	1.12%
Aug-19	3.29%	2.12%	1.17%
Sep-19	3.37%	2.16%	1.21%
Oct-19	3.39%	2.19%	1.20%
Nov-19	3.43%	2.28%	1.15%
Dec-19	3.40%	2.30%	1.10%
Jan-20	3.29%	2.22%	1.07%
Feb-20	3.11%	1.97%	1.14%
Mar-20	3.50%	1.46%	2.04%
Apr-20	3.19%	1.27%	1.92%
May-20	3.14%	1.38%	1.76%
Jun-20	3.07%	1.49%	1.58%
Jul-20	2.74%	1.31%	1.43%
Aug-20	2.73%	1.36%	1.37%
Sep-20	2.84%	1.42%	1.42%
Oct-20	2.95%	1.57%	1.38%
Nov-20	2.85%	1.62%	1.23%
Dec-20	2.77%	1.67%	1.10%
Jan-21	2.91%	1.82%	1.09%
Feb-21	3.09%	2.04%	1.05%
Mar-21	3.44%	2.34%	1.10%
Apr-21	3.30%	2.30%	1.00%
Average:	12-months		1.29%
	6-months		1.10%
	3-months		1.05%

Common Equity Risk Premiums
Years 1926-2020

	Large Common Stocks	Long-Term Corp. Bonds	Equity Risk Premium	Long-Term Govt. Bonds Yields
Low Interest Rates	12.06%	5.43%	6.63%	2.85%
Average Across All Interest Rates	12.16%	6.49%	5.67%	4.95%
High Interest Rates	12.26%	7.57%	4.69%	7.09%

Source of Information: 2021 SBBI Yearbook Stocks, Bonds, Bills, and Inflation

Basic Series
Annual Total Returns (except yields)

Year	Large Common Stocks	Long-Term Corp. Bonds	Long-Term Govt. Bonds Yields
2020	18.40%	15.40%	1.37%
1940	-9.78%	3.39%	1.94%
1945	36.44%	4.08%	1.99%
1941	-11.59%	2.73%	2.04%
1949	18.79%	3.31%	2.09%
1946	-8.07%	1.72%	2.12%
1950	31.71%	2.12%	2.24%
2019	31.49%	19.95%	2.25%
1939	-0.41%	3.97%	2.26%
1948	5.50%	4.14%	2.37%
1947	5.71%	-2.34%	2.43%
1942	20.34%	2.60%	2.46%
1944	19.75%	4.73%	2.46%
2012	16.00%	10.68%	2.46%
2014	13.69%	17.28%	2.46%
1943	25.90%	2.83%	2.48%
1938	31.12%	6.13%	2.52%
2017	21.83%	12.25%	2.54%
1936	33.92%	6.74%	2.55%
2011	2.11%	17.95%	2.55%
2015	1.38%	-1.02%	2.68%
1951	24.02%	-2.69%	2.69%
1954	52.62%	5.39%	2.72%
2016	11.96%	6.70%	2.72%
1937	-35.03%	2.75%	2.73%
1953	-0.99%	3.41%	2.74%
1935	47.67%	9.61%	2.76%
1952	18.37%	3.52%	2.79%
2018	-4.38%	-4.73%	2.84%
1934	-1.44%	13.84%	2.93%
1955	31.56%	0.48%	2.95%
2008	-37.00%	8.78%	3.03%
1932	-8.19%	10.82%	3.15%
1927	37.49%	7.44%	3.17%
1957	-10.78%	8.71%	3.23%
1930	-24.90%	7.98%	3.30%
1933	53.99%	10.38%	3.36%
1928	43.61%	2.84%	3.40%
1929	-8.42%	3.27%	3.40%
1956	6.56%	-6.81%	3.45%
1926	11.62%	7.37%	3.54%
2013	32.39%	-7.07%	3.78%
1960	0.47%	9.07%	3.80%
1958	43.36%	-2.22%	3.82%
1962	-8.73%	7.95%	3.95%
1931	-43.34%	-1.85%	4.07%
2010	15.06%	12.44%	4.14%
1961	26.89%	4.82%	4.15%
1963	22.80%	2.19%	4.17%
1964	16.48%	4.77%	4.23%
1959	11.96%	-0.97%	4.47%
1965	12.45%	-0.46%	4.50%
2007	5.49%	2.60%	4.50%
1966	-10.06%	0.20%	4.55%
2009	26.46%	3.02%	4.58%
2005	4.91%	5.87%	4.61%
2002	-22.10%	16.33%	4.84%
2004	10.88%	8.72%	4.84%
2006	15.79%	3.24%	4.91%
2003	28.68%	5.27%	5.11%
1998	28.58%	10.76%	5.42%
1967	23.98%	-4.95%	5.56%
2000	-9.10%	12.87%	5.58%
2001	-11.89%	10.65%	5.75%
1971	14.30%	11.01%	5.97%
1968	11.06%	2.57%	5.98%
1972	18.99%	7.26%	5.99%
1997	33.36%	12.95%	6.02%
1995	37.58%	27.20%	6.03%
1970	3.86%	18.37%	6.48%
1993	10.08%	13.19%	6.54%
1996	22.96%	1.40%	6.73%
1999	21.04%	-7.45%	6.82%
1969	-8.50%	-8.09%	6.87%
1976	23.93%	18.65%	7.21%
1973	-14.69%	1.14%	7.26%
1992	7.62%	9.39%	7.26%
1991	30.47%	19.89%	7.30%
1974	-26.47%	-3.06%	7.60%
1986	18.67%	19.85%	7.89%
1994	1.32%	-5.76%	7.99%
1977	-7.16%	1.71%	8.03%
1975	37.23%	14.64%	8.05%
1989	31.69%	16.23%	8.16%
1990	-3.10%	6.78%	8.44%
1978	6.57%	-0.07%	8.98%
1988	16.61%	10.70%	9.19%
1987	5.25%	-0.27%	9.20%
1985	31.73%	30.09%	9.56%
1979	18.61%	-4.18%	10.12%
1982	21.55%	42.56%	10.95%
1984	6.27%	16.86%	11.70%
1983	22.56%	6.26%	11.97%
1980	32.50%	-2.76%	11.99%
1981	-4.92%	-1.24%	13.34%

Yields for Treasury Constant Maturities
Yearly for 2016-2020
and the Twelve Months Ended April 2021

Years	1-Year	2-Year	3-Year	5-Year	7-Year	10-Year	20-Year	30-Year
2016	0.61%	0.84%	1.01%	1.34%	1.64%	1.84%	2.23%	2.60%
2017	1.20%	1.40%	1.58%	1.91%	2.16%	2.33%	2.65%	2.90%
2018	2.33%	2.53%	2.63%	2.75%	2.85%	2.91%	3.02%	3.11%
2019	2.05%	1.97%	1.94%	1.96%	2.05%	2.14%	2.40%	2.58%
2020	0.38%	0.40%	0.43%	0.54%	0.73%	0.89%	1.35%	1.56%
Five-Year Average	1.31%	1.43%	1.52%	1.70%	1.89%	2.02%	2.33%	2.55%

Months								
May-20	0.16%	0.17%	0.22%	0.34%	0.53%	0.67%	1.12%	1.38%
Jun-20	0.18%	0.19%	0.22%	0.34%	0.55%	0.73%	1.27%	1.49%
Jul-20	0.15%	0.15%	0.17%	0.28%	0.46%	0.62%	1.09%	1.31%
Aug-20	0.13%	0.14%	0.16%	0.27%	0.46%	0.65%	1.14%	1.36%
Sep-20	0.13%	0.13%	0.16%	0.27%	0.46%	0.68%	1.21%	1.42%
Oct-20	0.13%	0.15%	0.19%	0.34%	0.55%	0.79%	1.34%	1.57%
Nov-20	0.12%	0.17%	0.22%	0.39%	0.63%	0.87%	1.40%	1.62%
Dec-20	0.10%	0.14%	0.19%	0.39%	0.66%	0.93%	1.47%	1.67%
Jan-21	0.10%	0.13%	0.20%	0.45%	0.77%	1.08%	1.63%	1.82%
Feb-21	0.07%	0.12%	0.21%	0.54%	0.91%	1.26%	1.88%	2.04%
Mar-21	0.08%	0.15%	0.32%	0.82%	1.27%	1.61%	2.24%	2.34%
Apr-21	0.06%	0.16%	0.35%	0.86%	1.31%	1.64%	2.20%	2.30%
Twelve-Month Average	0.12%	0.15%	0.22%	0.44%	0.71%	0.96%	1.50%	1.69%
Six-Month Average	0.09%	0.15%	0.25%	0.58%	0.93%	1.23%	1.80%	1.97%
Three-Month Average	0.07%	0.14%	0.29%	0.74%	1.16%	1.50%	2.11%	2.23%

Measures of the Risk-Free Rate & Corporate Bond Yields

The forecast of Treasury and Corporate yields
per the consensus of nearly 50 economists
reported in the Blue Chip Financial Forecasts dated December 1, 2020 and May 4, 2021

Year	Quarter	Treasury					Corporate	
		1-Year Bill	2-Year Note	5-Year Note	10-Year Note	30-Year Bond	Aaa Bond	Baa Bond
2021	Second	0.1%	0.2%	0.9%	1.7%	2.4%	3.0%	3.9%
2021	Third	0.2%	0.3%	1.0%	1.8%	2.5%	3.2%	4.0%
2021	Fourth	0.2%	0.3%	1.1%	1.9%	2.6%	3.3%	4.2%
2022	First	0.2%	0.4%	1.2%	2.0%	2.7%	3.3%	4.2%
2022	Second	0.3%	0.5%	1.2%	2.1%	2.7%	3.4%	4.3%
2022	Third	0.3%	0.5%	1.3%	2.1%	2.8%	3.4%	4.3%
Long-range CONSENSUS								
2022		0.3%	0.4%	0.8%	1.3%	2.1%	2.8%	3.9%
2023		0.6%	0.8%	1.2%	1.7%	2.4%	3.2%	4.3%
2024		1.0%	1.2%	1.6%	2.0%	2.8%	3.6%	4.7%
2025		1.4%	1.6%	2.0%	2.4%	3.1%	4.0%	5.0%
2026		1.8%	1.9%	2.3%	2.6%	3.4%	4.2%	5.2%
Averages:								
	2022-2026	1.0%	1.2%	1.5%	2.0%	2.8%	3.6%	4.6%
	2027-2031	2.1%	2.3%	2.5%	2.8%	3.6%	4.5%	5.4%

Measures of the Market Premium

Value Line Return						
As of:		Dividend Yield		Median Appreciation Potential		Median Total Return
30-Apr-21		1.8%	+	6.78%	=	8.58%

DCF Result for the S&P 500 Composite								
D/P	(	1+.5g	)	+	g	=		k
1.4%	(	1.065	)	+	13.0%	=		14.49%

Summary	
Value Line	8.58%
S&P 500	14.49%
Average	11.54%
Risk-free Rate of Return (Rf)	2.75%
Forecast Market Premium	8.79%

Historical Market Premium			
Low Interest Rates	(Rm)	(Rf)	
1926-2020 Arith. mean	12.06%	2.85%	9.21%
Average - Forecast/Historical			9.00%

Exhibit 7.8: Size-Decile Portfolios of the NYSE/NYSE MKT/NASDAQ Long-Term Returns in Excess of CAPM
1926–2016

Size Grouping	OLS Beta	Arithmetic Mean	Return in Excess of Risk-free Rate (actual)	Return in Excess of Risk-free Rate (as predicted by CAPM)	Size Premium
Mid-Cap (3–5)	1.12	13.82%	8.80%	7.79%	1.02%
Low-Cap (6–8)	1.22	15.26%	10.24%	8.49%	1.75%
Micro-Cap (9–10)	1.35	18.04%	13.02%	9.35%	3.67%
Breakdown of Deciles 1–10					
1-Largest	0.92	11.05%	6.04%	6.38%	-0.35%
2	1.04	12.82%	7.81%	7.19%	0.61%
3	1.11	13.57%	8.55%	7.66%	0.89%
4	1.13	13.80%	8.78%	7.80%	0.98%
5	1.17	14.62%	9.60%	8.09%	1.51%
6	1.17	14.81%	9.79%	8.14%	1.66%
7	1.25	15.41%	10.39%	8.67%	1.72%
8	1.30	16.14%	11.12%	9.04%	2.08%
9	1.34	16.97%	11.96%	9.28%	2.68%
10-Smallest	1.39	20.27%	15.25%	9.66%	5.59%

Betas are estimated from monthly returns in excess of the 30-day U.S. Treasury bill total return, January 1926–December 2016. Historical riskless rate measured by the 91-year arithmetic mean income return component of 20-year government bonds (5.02%). Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (11.95%) minus the arithmetic mean income return component of 20-year government bonds (5.02%) from 1926–2016. Source: Morningstar *Direct* and CRSP. Calculated based on data from CRSP US Stock Database and CRSP US Indices Database ©2017 Center for Research. Used with permission. All calculations performed by Duff & Phelps, LLC.

Comparable Earnings Approach
Using Non-Utility Companies with
Timeliness of 1, 2 & 3; Safety Rank of 2 & 3; Financial Strength of B+, B++, & A;
Price Stability of 75 to 100; Betas of .65 to .95; and Technical Rank of 2, 3 & 4

Company	Industry	Timeliness Rank	Safety Rank	Financial Strength	Price Stability	Beta	Technical Rank
AAON Inc	Machinery	3	3	B+	75	0.85	2
Agilent Technologies	Precision Instrument	2	2	A	95	0.90	4
AmerisourceBergen Corp	Med Supp Non-Invasive	2	2	A	75	0.90	3
AptarGroup Inc	Packaging & Container	3	2	B++	100	0.90	4
Assurant Inc	Financial Svcs. (Div.)	3	2	A	90	0.90	4
Balchem Corp.	Chemical (Specialty)	2	3	B++	80	0.75	3
Bio Rad Laboratories Inc	Med Supp Non-Invasive	2	2	A	85	0.75	3
Bio-Techne Corp.	Biotechnology	2	2	A	80	0.85	4
Booz Allen Hamilton Holding Corporatic	Industrial Services	3	3	B++	80	0.90	4
Broadridge Fin'l	Information Services	3	2	B++	95	0.80	3
BWX Technologies	Power	3	3	B++	75	0.90	3
CACI International Inc	IT Services	3	3	B+	85	0.95	3
Caseys General Stores Inc	Retail/Wholesale Food	3	3	B+	80	0.90	4
Cboe Global Markets	Brokers & Exchanges	3	2	A	85	0.90	4
Charter Communic.	Cable TV	1	3	B++	85	0.90	3
Cooper Companies Inc	Med Supp Non-Invasive	3	2	A	90	0.95	4
CSG Systems International Inc	IT Services	3	3	B+	90	0.75	2
Dolby Laboratories Inc	Entertainment Tech	3	2	A	90	0.95	3
Dollar Tree Inc	Retail Store	2	3	A	70	0.75	2
Estee Lauder Companies Inc	Toiletries/Cosmetics	3	2	A	85	0.95	3
Franklin Electric Co Inc	Electrical Equipment	2	3	A	80	0.95	4
FTI Consulting Inc	Industrial Services	3	3	A	75	0.75	3
Gentex Corp	Auto Parts	3	3	B++	85	0.95	3
Globus Medical Inc	Med Supp Invasive	3	3	B++	70	0.80	4
Hanover Insurance Group Inc	Insurance (Prop/Cas.)	3	2	B++	95	0.95	3
Intercontinental Exch.	Brokers & Exchanges	2	2	A	100	0.95	3
Lancaster Colony Corporation	Food Processing	3	2	A	95	0.70	3
Lindsay Corporation	Machinery	2	3	B++	80	0.85	3
ManTech International Corporation	IT Services	3	3	B++	85	0.85	2
Masimo Corporation	Med Supp Non-Invasive	3	2	A	70	0.80	3
Mercury General Corp	Insurance (Prop/Cas.)	3	3	B++	75	0.90	3
Mettler Toledo International Inc	Precision Instrument	1	2	B++	90	0.95	4
MSC Industrial Direct Co Inc	Machinery	3	2	A	75	0.95	3
Murphy USA Inc	Retail (Hardlines)	3	3	B++	70	0.75	2
Neogen Corp	Med Supp Non-Invasive	3	3	B++	70	0.80	3
Northwest Bancshares Inc	Thrift	3	3	B+	95	0.95	2
O Reilly Automotive Inc	Retail Automotive	3	3	B++	75	0.95	4
OSI Systems Inc	Precision Instrument	3	3	B++	75	0.90	3
Park National Corp	Bank (Midwest)	2	3	B++	80	0.85	2
PerkinElmer Inc	Precision Instrument	2	2	B++	85	0.90	3
Philip Morris International Inc	Tobacco	3	3	B++	80	0.95	3
Post Holdings Inc	Food Processing	3	3	B++	85	0.95	4
Quest Diagnostics Inc	Medical Services	3	2	B++	90	0.80	3
Republic Services Inc	Environmental	3	2	B++	100	0.90	4
RLI Corp	Insurance (Prop/Cas.)	2	2	B++	90	0.80	3
Rollins Inc	Industrial Services	3	2	A	90	0.85	4
Salesforce Com Inc	E-Commerce	1	3	B++	70	0.80	3
Selective Insurance Group Inc	Insurance (Prop/Cas.)	2	3	B+	85	0.90	3
Sensient Technologies Corp	Food Processing	3	2	B++	95	0.90	3
Service Corp International Inc	Industrial Services	3	3	B+	90	0.95	3
Silgan Holdings Inc	Packaging & Container	3	2	B+	100	0.85	3
Stepan Company	Chemical (Specialty)	3	3	B++	75	0.80	4
Target Corp	Retail Store	2	2	A	75	0.70	4
Tetra Tech	Environmental	2	3	B++	80	0.95	3
Tyson Foods	Food Processing	3	3	B+	70	0.75	3
Vail Resorts	Hotel/Gaming	2	3	B+	80	0.95	3
Verisk Analytics Inc	Information Services	3	2	B++	100	0.90	4
Viavi Solutions	Electronics	3	3	B+	70	0.95	3
Walgreens Boots	Retail Store	3	3	A	75	0.85	3
Waters Corp	Precision Instrument	1	2	A	90	0.95	3
Western Union Company	Financial Svcs. (Div.)	3	3	B+	95	0.80	3
Wiley John and Sons Inc (Class A)	Publishing	3	3	B+	80	0.85	3
Average		3	3	B++	84	0.87	3
Water Group	Average	2	3	B++	86	0.78	3

Source of Information: Value Line Investment Survey for Windows, May 2021

Comparable Earnings Approach
Five -Year Average Historical Earned Returns
for Years 2016-2020 and
Projected 3-5 Year Returns

Company	2016	2017	2018	2019	2020	Average	Projected 2024-26
AAON Inc	25.9%	21.1%	17.2%	18.5%	22.5%	21.0%	21.5%
Agilent Technologies	15.4%	15.9%	19.9%	20.8%	21.0%	18.6%	19.5%
AmerisourceBergen Corp	60.4%	63.2%	48.8%	52.2%	NMF	56.2%	NMF
AptarGroup Inc	17.5%	16.8%	13.7%	16.6%	11.6%	15.2%	14.5%
Assurant Inc	13.8%	12.2%	4.9%	6.8%	7.4%	9.0%	7.5%
Balchem Corp.	10.7%	14.6%	11.4%	10.7%	10.5%	11.6%	15.5%
Bio Rad Laboratories Inc	3.7%	2.2%	4.4%	3.7%	3.2%	3.4%	6.5%
Bio-Techne Corp.	11.9%	9.2%	9.8%	8.2%	11.0%	10.0%	17.0%
Booz Allen Hamilton Holding Corporation	44.0%	55.0%	58.8%	56.4%	51.0%	53.0%	31.0%
Broadridge Fin'l	29.4%	32.6%	46.1%	49.1%	43.7%	40.2%	35.0%
BWX Technologies	122.0%	71.1%	96.3%	60.4%	44.8%	78.9%	38.0%
CACI International Inc	8.9%	9.1%	9.4%	11.2%	12.1%	10.1%	11.5%
Caseys General Stores Inc	14.9%	11.2%	14.5%	16.1%	16.0%	14.5%	13.5%
Cboe Global Markets	58.4%	12.9%	13.1%	11.1%	13.9%	21.9%	12.0%
Charter Communic.	8.8%	1.5%	3.4%	5.3%	13.5%	6.5%	17.5%
Cooper Companies Inc	10.1%	11.7%	10.3%	12.9%	6.2%	10.2%	12.5%
CSG Systems International Inc	25.0%	17.9%	18.3%	20.9%	13.9%	19.2%	22.0%
Dolby Laboratories Inc	9.4%	9.4%	12.6%	11.1%	9.5%	10.4%	13.0%
Dollar Tree Inc	16.6%	16.1%	23.1%	18.1%	18.4%	18.5%	15.5%
Estee Lauder Companies Inc	31.2%	28.5%	36.2%	45.1%	38.4%	35.9%	53.0%
Franklin Electric Co Inc	12.8%	12.5%	14.6%	12.3%	12.1%	12.9%	14.0%
FTI Consulting Inc	7.7%	7.6%	11.4%	14.8%	12.5%	10.8%	16.0%
Gentex Corp	18.2%	18.0%	23.5%	21.9%	17.9%	19.9%	27.0%
Globus Medical Inc	12.5%	12.2%	13.2%	11.1%	6.8%	11.2%	12.0%
Hanover Insurance Group Inc	6.5%	6.8%	9.9%	11.4%	11.1%	9.1%	10.0%
Intercontinental Exch.	10.6%	10.4%	12.1%	12.7%	12.8%	11.7%	10.5%
Lancaster Colony Corporation	23.7%	20.0%	20.7%	20.7%	17.5%	20.5%	17.0%
Lindsay Corporation	11.4%	8.6%	11.4%	5.8%	12.9%	10.0%	12.5%
ManTech International Corporation	4.5%	4.7%	5.9%	7.6%	7.6%	6.1%	8.5%
Masimo Corporation	21.5%	24.2%	20.0%	16.8%	17.1%	19.9%	15.5%
Mercury General Corp	5.4%	5.1%	6.2%	8.0%	15.1%	8.0%	14.0%
Mettler Toledo International Inc	88.4%	81.9%	83.6%	NMF	NMF	84.6%	NMF
MSC Industrial Direct Co Inc	21.1%	18.7%	20.8%	20.0%	20.1%	20.1%	22.0%
Murphy USA Inc	23.8%	21.2%	22.1%	19.3%	49.2%	27.1%	18.0%
Neogen Corp	9.0%	9.3%	10.3%	9.4%	8.2%	9.2%	8.0%
Northwest Bancshares Inc	4.2%	7.6%	8.4%	8.2%	4.9%	6.7%	10.5%
O Reilly Automotive Inc	63.8%	NMF	NMF	NMF	NMF	63.8%	NMF
OSI Systems Inc	4.8%	3.7%	5.3%	11.7%	13.2%	7.7%	13.0%
Park National Corp	11.6%	11.3%	13.3%	10.6%	12.3%	11.8%	10.5%
PerkinElmer Inc	13.3%	12.9%	15.6%	16.3%	24.9%	16.6%	15.5%
Philip Morris International Inc	NMF	NMF	NMF	NMF	NMF	-	NMF
Post Holdings Inc	7.2%	7.6%	10.1%	12.7%	6.7%	8.9%	11.0%
Quest Diagnostics Inc	15.9%	16.2%	16.8%	15.9%	22.6%	17.5%	16.5%
Republic Services Inc	9.9%	10.3%	12.8%	13.2%	13.0%	11.8%	15.0%
RLI Corp	11.3%	8.7%	11.4%	11.8%	10.3%	10.7%	11.0%
Rollins Inc	29.4%	29.2%	32.5%	24.9%	28.0%	28.8%	35.5%
Salesforce Com Inc	2.4%	1.4%	7.1%	0.4%	9.7%	4.2%	12.0%
Selective Insurance Group Inc	10.6%	10.8%	12.2%	12.0%	9.1%	10.9%	11.0%
Sensient Technologies Corp	17.2%	17.7%	18.3%	14.2%	11.7%	15.8%	13.0%
Service Corp International Inc	16.2%	21.2%	20.4%	19.4%	22.0%	19.8%	13.0%
Silgan Holdings Inc	32.7%	20.7%	25.4%	18.9%	24.6%	24.5%	15.0%
Stepan Company	13.6%	12.4%	14.4%	11.6%	12.5%	12.9%	13.0%
Target Corp	26.7%	22.1%	25.4%	27.6%	30.2%	26.4%	34.5%
Tetra Tech	12.8%	13.3%	15.4%	17.8%	17.0%	15.3%	22.0%
Tyson Foods	18.4%	18.7%	17.8%	14.2%	13.6%	16.5%	13.5%
Vail Resorts	17.1%	13.4%	23.9%	20.1%	7.5%	16.4%	24.5%
Verisk Analytics Inc	33.9%	28.8%	28.9%	19.9%	27.5%	27.8%	22.0%
Viavi Solutions	13.1%	11.8%	14.8%	21.5%	24.1%	17.1%	14.5%
Walgreens Boots	16.8%	20.0%	23.0%	23.5%	20.2%	20.7%	21.5%
Waters Corp	22.7%	27.0%	39.9%	39.9%	224.7%	70.8%	25.5%
Western Union Company	91.4%	-	-	NMF	NMF	91.4%	NMF
Wiley John and Sons Inc (Class A)	17.4%	16.6%	14.2%	NMF	12.5%	15.2%	13.0%
Average						21.9%	17.3%
Median						15.8%	14.5%
Average (excluding companies with values >20%)						12.4%	13.2%

Comparable Earnings Approach
Screening Parameters

Timeliness Rank

The rank for a stock's probable relative market performance in the year ahead. Stocks ranked 1 (Highest) or 2 (Above Average) are likely to outpace the year-ahead market. Those ranked 4 (Below Average) or 5 (Lowest) are not expected to outperform most stocks over the next 12 months. Stocks ranked 3 (Average) will probably advance or decline with the market in the year ahead. Investors should try to limit purchases to stocks ranked 1 (Highest) or 2 (Above Average) for Timeliness.

Safety Rank

A measure of potential risk associated with individual common stocks rather than large diversified portfolios (for which Beta is good risk measure). Safety is based on the stability of price, which includes sensitivity to the market (see Beta) as well as the stock's inherent volatility, adjusted for trend and other factors including company size, the penetration of its markets, product market volatility, the degree of financial leverage, the earnings quality, and the overall condition of the balance sheet. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit purchases to equities ranked 1 (Highest) or 2 (Above Average) for Safety.

Financial Strength

The financial strength of each of the more than 1,600 companies in the VS II data base is rated relative to all the others. The ratings range from A++ to C in nine steps. (For screening purposes, think of an A rating as "greater than" a B). Companies that have the best relative financial strength are given an A++ rating, indicating ability to weather hard times better than the vast majority of other companies. Those who don't quite merit the top rating are given an A+ grade, and so on. A rating as low as C++ is considered satisfactory. A rating of C+ is well below average, and C is reserved for companies with very serious financial problems. The ratings are based upon a computer analysis of a number of key variables that determine (a) financial leverage, (b) business risk, and (c) company size, plus the judgment of Value Line's analysts and senior editors regarding factors that cannot be quantified across-the-board for companies. The primary variables that are indexed and studied include equity coverage of debt, equity coverage of intangibles, "quick ratio", accounting methods, variability of return, fixed charge coverage, stock price stability, and company size.

Price Stability Index

An index based upon a ranking of the weekly percent changes in the price of the stock over the last five years. The lower the standard deviation of the changes, the more stable the stock. Stocks ranking in the top 5% (lowest standard deviations) carry a Price Stability Index of 100; the next 5%, 95; and so on down to 5. One standard deviation is the range around the average weekly percent change in the price that encompasses about two thirds of all the weekly percent change figures over the last five years. When the range is wide, the standard deviation is high and the stock's Price Stability Index is low.

Beta

A measure of the sensitivity of the stock's price to overall fluctuations in the New York Stock Exchange Composite Average. A Beta of 1.50 indicates that a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Average. Use Beta to measure the stock market risk inherent in any diversified portfolio of, say, 15 or more companies. Otherwise, use the Safety Rank, which measures total risk inherent in an equity, including that portion attributable to market fluctuations. Beta is derived from a least squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the NYSE Average over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are periodically adjusted for their long-term tendency to regress toward 1.00.

Technical Rank

A prediction of relative price movement, primarily over the next three to six months. It is a function of price action relative to all stocks followed by Value Line. Stocks ranked 1 (Highest) or 2 (Above Average) are likely to outpace the market. Those ranked 4 (Below Average) or 5 (Lowest) are not expected to outperform most stocks over the next six months. Stocks ranked 3 (Average) will probably advance or decline with the market. Investors should use the Technical and Timeliness Ranks as complements to one another.